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Family Functioning, Parenting Practices, and Psychological Outcomes in Children With Diabetes as Compared to Children Without Diabetes

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FAMILY FUNCTIONING, PARENTING PRACTICES, AND PSYCHOLOGICAL OUTCOMES IN CHILDREN WITH DIABETES AS COMPARED TO CHILDREN WITHOUT DIABETES

by

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This dissertation, submitted by Lisa Leadbettter in partial fulfillment of the requirements for the Degree of Doctor of Philosophy from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

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This dissertation meets the standards for appearance, conforms to the style and format requirements of the Graduate School of the University of North Dakota, and is hereby approved.

Dean of the Graduate School

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Abstract

The aims of this study were to identify what family environment and parenting practices are related to diabetic adherence and healthy psychological adjustment in children with diabetes as compared to those without diabetes. Participants included 60 families, including 30 families with children with diabetes and 30 age- and gender-matched controls without diabetes. Questionnaires were administered to the target child (the child with diabetes) or the control child that assessed symptoms of depression, anxiety, self-concept and coping strategies. Additionally, one parent from each family completed questionnaires measuring family environment, parental stress, and parenting practices, as well as symptoms of his or her child's internalizing and externalizing behaviors and diabetic adherence. Contrary to many findings in the literature, results revealed no significant differences between groups on measures of interest. Significant associations were found between measures of family functioning (e.g., conflict, parental stress) and child outcomes for each group. Additionally, results for diabetic families found that greater parental involvement was associated with better metabolic control, earlier diagnosis of diabetes was associated with greater parental supervision, and ineffective parenting behaviors (e.g., laxness, overreactivity) were associated with more problematic child behaviors. However, it also appears that children with diabetes who participated in the study were not significantly different from their healthy peers in their psychological functioning and did not reveal clinically significant difficulties overall.

CHAPTER I

INTRODUCTION

Insulin-dependent diabetes mellitus (IDDM), also known as Type I diabetes, is a chronic disease of the endocrine system that affects more than one million Americans. Although it can be diagnosed at any age, diabetes is one of the most common chronic illnesses in children (Juvenile Diabetes Foundation, 2000). Approximately 1 out of every 600 children in North America under the age of 12 is diagnosed with diabetes (Rovet & Fernandes, 1999). The causes of diabetes remain somewhat unknown, but it is thought that the body's immune system destroys the cells that produce insulin, thus depleting the supply of insulin. Beta cells in the pancreas are responsible for producing insulin, which is a hormone that is essential for life that plays an important role in how the body metabolizes glucose. In diabetics, however, it is believed that the beta cells are genetically vulnerable and, when exposed to an environmental stressor such as an antigen or an infection, the cells begin to diminish. The onset of diabetes is an insidious process as beta cells are gradually destroyed, which results in a deficiency of insulin (Rovet & Fernandes, 1999). Common symptoms of diabetes include excessive thirst (polydipsia), constant hunger, frequent urination (polyuria), sudden weight loss and fatigue (Juvenile Diabetes Foundation, 2000).

Treatment for diabetes includes several daily insulin injections in order to help the body survive. However, insulin injections do not cure the disease and do not prevent serious complications as manufactured insulin does not perfectly control insulin levels as natural insulin normally would. Factors such as stress, hormonal changes, periods of growth, illness, infection, or fatigue can impact the body's ability to control metabolism of glucose (Juvenile Diabetes Foundation, 2000). Therefore, it is also necessary for individuals with diabetes to maintain continuous compliance with their medical regimen in order to survive. This involves testing blood glucose levels up to six times per day through finger pricks, maintaining a healthy diet with proper amounts and types (e.g., carbohydrates) of food, and engaging in proper exercise in order to maintain proper metabolic control of glucose (Juvenile Diabetes Foundation, 2000). When glucose levels rise above (hyperglycemia) or fall below (hypoglycemia) an acceptable range, life-threatening conditions can develop in the diabetic patient. Hyperglycemia occurs when glucose levels rise too high and insulin levels become too low. This creates increased risk for a number of complications such as stroke, retinopathy, and limb amputation (Rovet & Fernandes, 1999). Diabetes is the leading cause of kidney failure and one of the leading causes of heart disease and adult blindness, and hyperglycemia can magnify these risks. In addition, poor adherence to health care requirements and poor monitoring of glucose levels can result in a serious condition known as diabetic ketoacidosis (DKA). DKA can lead to loss of consciousness, coma, permanent damage to central nervous system functioning, or death. Serious problems can also occur when glucose levels fall too low (i.e., hypoglycemia), which can be a result of insulin dosages that are too high, prolonged physical exertion, or missed meals. Hypoglycemia can cause complications

such as loss of consciousness, seizure, coma or death (Juvenile Diabetes Foundation, 2000; Rovet & Fernandes, 1999). Diabetic complications from poor metabolic control can lead to additional problems of hospitalizations, school absences, and neurocognitive impairment in children. Appropriate metabolic control can, however, reduce the complications associated with diabetes (Diabetes Control and Complications Trial Research Group, 1994).

Previous studies have found a number of factors associated with negative outcomes in physical and psychological functioning of children with diabetes. A review of the relevant literature will follow that examines the psychosocial functioning of children with diabetes and the characteristics that have been found in their family environments. Chronic stress in a family can impact a parent's ability to interact with and parent a child effectively, which may result in negative outcomes for the child. Other characteristics of the family environment (e.g., marital conflict) can also impact the functioning of a chronically ill child. Furthermore, the presence of chronic stress for diabetic children can influence the physical health of diabetic children (Chase & Jackson, 1981; Edwards, 1999). The relationships between parental stress and the presence of diabetes; parental stress, parenting behaviors, and psychological outcomes; and parenting behaviors and physical outcomes for children with and without diabetes will be reviewed in this introduction. Additionally, relationships between family functioning and physical outcomes; family functioning and psychological outcomes; and coping and child outcomes will also be examined for both groups.

Psychosocial Outcomes in Children with Diabetes

Children who are diagnosed with a chronic illness such as diabetes are more likely than children without illnesses to have subsequent psychosocial problems (American Academy of Pediatrics, 1993). Jacobson (1996) identified common psychosocial difficulties associated with a diagnosis of diabetes, including initial feelings of anger, loss and bereavement on the part of the child and family. Children with diabetes have been found to have poorer academic achievement, lower self-esteem, and more psychological problems than non-diabetic children (Holmes, Yu, & Frentz, 1999; Rovet & Fernandes, 1999). The attitude toward and knowledge of self-care by the diabetic child and his/her family can also be crucial in preventing or minimizing psychological problems and medical complications in the child (Jacobson et al., 1987; Schafer, Glasgow, McCaul, & Dreher, 1983).

Children with diabetes have a higher prevalence of emotional and behavioral disorders than those without diabetes (Liss et al., 1998). Kovacs, Mukerji, Iyengar, and Drash (1996) followed a group of children with diabetes in a longitudinal study and found that approximately one-half of the children had at least one psychiatric disorder, most often depression, anxiety, or disruptive behavior disorders. Diabetic individuals with a comorbid psychiatric illness were also found to have lower self-esteem and social competence than diabetics without a comorbid psychiatric illness (Liss et al., 1998). There is also a significant relation between psychiatric disorders in diabetic patients and poor metabolic control (Daviss et al., 1995; Liss et al., 1998; Medical Tribune News Service, 1999). A recent study by Liss et al. (1998) examined the relation between psychiatric illness and metabolic control in diabetic children. They examined 50 children

aged 9 to 17 years; 25 children reported recent hospitalizations for diabetic ketoacidosis (DKA) and 25 diabetic children without DKA served as outpatient controls. They found that children with reported DKA had significantly higher glycosylated hemoglobin levels (e.g., HbA1c; the most accurate indicator of metabolic control), more hospital admissions, less compliance, and poorer family support with diabetes self-care than the diabetic children without DKA. Additionally, a significantly larger number of diabetic children with DKA (88%) reported comorbid psychiatric illnesses compared to individuals in the control group (28%); these psychiatric illnesses included anxiety, depression and disruptive behavior disorders. Although it could not be determined from the correlational study whether poor diabetic control was a result or cause of psychopathology, the study suggests there may be additional risks associated with psychopathology (Liss et al., 1998).

Prior studies have found a significant relation between psychopathology (e.g., depression) and poor metabolic control in diabetics, and the association between poor metabolic control and increased risk of diabetic complications has also been well-established (Kovacs et al., 1996; Liss et al., 1998). Cohen, Welch, Jacobson, DeGroot, and Samson (1997) examined the association between psychiatric illnesses and diabetic complications in 49 adults with diabetes. Results indicated that 57% of the sample had a history of at least one psychiatric disorder, most often affective disorders. In addition, the authors found that diabetics with a history of psychiatric illness had poorer metabolic control and significantly worse retinopathy when compared to those without a psychiatric history. This study illustrates the prevalence of psychiatric disorders in diabetic patients into adulthood, as well as the increased risk of diabetic-related complications (e.g.,

retinopathy) in individuals with comorbid psychiatric disorders (Cohen et al., 1997). Additionally, recent information indicates that a comorbid disorder of depression increases a diabetic's risk for heart disease and obesity (Medical Tribune News Service, 1999).

Parental Stress and Diabetes

A diagnosis of diabetes in a child can have implications for both the child and the family. As children and adolescents are still dependent on their parents for many needs, a chronic illness can present significant stressors for a family as members learn to adapt to and cope with many changes. Children with diabetes often require changes in daily routines of the family (e.g., meal time and diet), as well as parental monitoring of insulin levels, activities, diet and glucose checks (Hauser, DiPlacido, Jacobson, Willett, & Cole, 1993). Children with diabetes experience increased parental stress, parent-child conflicts, and continuous adaptation to ongoing stressors and crises (Floyd & Gallagher, 1997). Kovacs et al. (1985) examined the initial reactions of parents to their child's diagnosis of diabetes. Results indicated that parents reported increases in overall distress, anxiety and depression after the diagnosis, although these symptoms were at subclinical levels. Parents of children with diabetes report more parental stress than those without diabetic children (Hauenstein, Scarr & Abidin, 1989; Wysocki, Huxtable, Linscheid & Wayne, 1989). Results from two studies of parental stress (Hauenstein et al., 1989; Wysocki et al., 1989) found that mothers of diabetic children were more likely to describe their children as moody, demanding, manipulative and disruptive than mothers of non-diabetic children. In addition, mothers of children with diabetes reported feeling less attachment

to their children, less competence in their parenting, and greater overall parental stress (Hauenstein et al., 1989).

Parental Stress, Parental Behaviors, and Child Outcomes

Parental stress in the parent-child dyad is significant with regard to the impact on parents' use of effective parenting strategies. Webster-Stratton's (1990) conceptual model of parental stress posits that stressors can arise from external sources (e.g., unemployment), interpersonal factors (e.g., marital conflict), or child factors (e.g., temperament). Parents must use available coping skills to manage their reactions to the stress. When parents are unable to cope with stress appropriately, it may disrupt their ability to use appropriate parenting strategies. Some parents respond with negative parenting styles, such as increased irritability and more critical behaviors toward their child, which is thought to increase the child behavior problems. Furthermore, greater behavior problems in children can, in turn, lead to more negative parent-child interactions and continued parental stress (Webster-Stratton, 1990). Abidin (1995) similarly proposed a model of how parental stress can impact parenting behaviors. Abidin's model proposes that child characteristics (e.g., temperament, responsiveness to parent), parental characteristics (e.g., psychopathology, personality) and situational variables (e.g., social support, parental health) interact and impact upon parental stress, which may result in dysfunctional parenting behaviors.

The general parenting literature has found that the quality of parenting behaviors is associated with psychological outcomes in children (Arnold, O'Leary, Wolff, & Acker, 1993; Baumrind, 1971; Patterson, 1982). Parenting styles that are characterized by coerciveness, unresponsive interactions with children, and poor parental monitoring and

discipline are correlated with conduct and behavior problems in children (Dishion, Patterson, Stoolmiller, & Skinner, 1991; Patterson, Reid, & Dishion, 1992). Warm and nurturing parenting styles are associated with higher self-esteem and competence in children (Baumrind, 1971). Parenting styles involving harsh, overreactive or inconsistent discipline practices are associated with increased aggression in children, and the use of lax, inconsistent or ambiguous parenting commands has been associated with noncompliance in young children (Arnold et al., 1993).

Parental Behaviors and Outcomes in Chronically Ill Children

Studies reviewed previously (e.g., Arnold et al., 1993; Patterson et al., 1992) have identified an association between dysfunctional parenting behaviors and noncompliance in medically healthy children. Knowledge is limited, however, on the relation between parenting behaviors and compliance in diabetic children. Information is also needed on how illness in children affects parental child-rearing expectations and behaviors. Few studies have examined differences in child-rearing and discipline behaviors between families with chronically ill children and families with healthy children (Hauenstein, 1990). However, research has examined child-rearing issues within and across families with various chronic illnesses. Results from two studies (Markova, Macdonald, & Forbes, 1980; Walker, Ford, & Donald, 1987) found that parents of children with cystic fibrosis and hemophilia both reported variability in their daily child-rearing expectations and assignments of household chores based upon the severity of the child's illness. Additionally, Ieyers, Drotar, Dahms, Doershuk, and Stern (1994) compared child-rearing behaviors of parents of children with diabetes, cystic fibrosis, and healthy controls. Mothers reported on their parenting behaviors regarding involvement, limit setting,

responsiveness, reasoning and guidance, free expression, and intimacy. Results revealed that mothers of children with cystic fibrosis and diabetes both indicated they were significantly less likely to set limits for their children than mothers of healthy children. No other differences were found across the three groups on remaining indices of child-rearing behaviors (Ieyers et al., 1994).

Additional studies examining parenting behaviors in families of children with diabetes would be beneficial in order to examine particular parenting strategies that relate to increased metabolic control and better psychological functioning in these children. Previous research has examined parenting styles as they relate to medical outcomes in diabetic children, but is limited with regard to the relationship between parenting and psychological outcomes. Liss et al. (1998) examined relations between parenting styles and metabolic control in two groups of diabetic children. Results indicated that parents of children with diabetic complications and poor metabolic control reported less well-defined family rules, increased parental control, and decreased empathy related to diabetic care as compared to parents of diabetic children without complications. The authors speculated that a parenting style that emphasizes behavioral control at the expense of empathy may lead to less compliance and poorer metabolic control (Liss et al., 1998). Similarly, White, Kolman, Wexler, Polin, and Winter (1984) examined parenting variables in relation to outcomes in diabetic children. Unfortunately, the authors indicated that their data was inconclusive due to methodological limitations, such as small sample size, subject attrition, and use of unstandardized observations of parenting style. Results provided preliminary support, however, for the relationship between inadequate parental involvement and poor diabetic control and recurrent

complications in children with diabetes (White et al., 1984). Anderson, Ho, Brackett, Finkelstein, and Laffel (1997) examined specific parenting behaviors related to adherence and metabolic control in children aged 10 to 15 years with diabetes. Parenting behaviors were examined using an interview that assessed parental involvement in diabetes management (e.g., insulin injections and blood glucose monitoring) for a typical day. Results indicated parental involvement was similar between younger and older adolescents, with a trend for more involvement at younger ages. Parental involvement was found to be correlated with diabetic adherence to blood glucose monitoring, which is associated with increased metabolic control (Anderson et al., 1997). Thus, there does appear to be an association between increased monitoring and involvement of parents with better diabetic outcomes.

Family Functioning and Physiological Outcomes in Children with Diabetes

Previous studies have also found that variables of family functioning play a significant role in children's diabetic control (Anderson, Auslander, Jung, Miller, & Santiago, 1990; Auslander, Bubb, Rogge, & Santiago, 1993; Daviss et al., 1995; White et al., 1984). Auslander et al. (1993) examined how levels of family stress are related to the physical functioning of the diabetic child. Reports of higher levels of family stress were associated with poorer metabolic control in diabetic children. The study findings highlight the importance of family factors for the health of diabetic children. Waller et al. (1986) investigated which family variables are related to children's metabolic control by developing a disease-specific family behavior scale that assessed behaviors on dimensions of warmth/caring, guidance/control, and problem-solving. Examination of the correlations between scale scores and metabolic control allowed the authors to

identify the particular family behaviors that were associated with better functioning in diabetic children. Results indicated that family behaviors of guidance/control correlated significantly with metabolic control for younger diabetic children (aged 7-12), and some warmth/caring behaviors were significantly associated with metabolic control in adolescents (aged 13-17).

A study by Anderson, Miller, Auslander, and Santiago (1981) identified adolescents with poor, fair, or good metabolic control, and then examined the family characteristics that differentiated those groups. Results indicated that adolescents with good metabolic control reported their families to be more cohesive, less conflictual, and more encouraging of independence compared to adolescents with poorer metabolic control. Other studies have also found high family conflict and low family cohesiveness to be significantly related to poor metabolic control and diabetic complications in children with diabetes (Daviss et al., 1995; Diabetes Control and Complications Trial Research Group, 1994). On the other hand, Kovacs, Kass, Schnell, Goldston, and Marsh (1989) did not find that family environment was significantly related to metabolic control in children with diabetes. This finding is contrary to conclusions of previous research, and may be due to methodological differences across the studies. Although Kovacs et al. (1989) used a longitudinal study to assess outcomes over time, the measure of family environment used in the study was different from those used in previous studies. In a more recent longitudinal study using similar measures as previous studies (e.g., Daviss et al., 1995), Hauser et al. (1990) found that diabetic compliance was higher when family cohesion was high, and that family conflict was one of the strongest predictors of poor adherence in diabetic adolescents.

Studies examining families of children with diabetes have not found significant differences in the amount of family conflict in these families compared to non-diabetic families (Anderson et al., 1981). However, as mentioned above, studies have found that family conflict is associated with increased physical problems in diabetic children (Daviss et al., 1990; Hauser et al., 1990). The presence of conflict in a family with a chronically ill child can present as an added stressor and lead to diabetes-related problems in children from conflictual families. Gross, Magalnick, and Richardson (1985) conducted a study on a family intervention aimed at improving metabolic control in diabetic children and reducing family conflict. In previous studies, children have indicated that management of the medical regimen has proven to be more difficult for them than other aspects of the disease. Furthermore, parental response to non-compliance and attempts to intervene can escalate family conflict, rather than improving metabolic control (Gross et al., 1985). Gross et al. (1985) implemented a self-management training program for both children and parents aimed at increasing the child's compliance to medical requirements and decreasing diabetes-related conflicts. Results indicated that expected treatment gains were obtained and maintained over a 6-month follow-up, demonstrating that decreasing family conflicts was associated with improved diabetic outcomes in children (Gross et al., 1985).

Family Functioning and Psychological Outcomes in Chronically-Ill Children

Studies have also shown that family characteristics are related to the psychological functioning of the diabetic child. Wertlieb, Hauser, and Jacobson (1986) found that fewer child behavior problems were reported in families with less conflict. Also, Varni, Babani, Wallander, Roe, and Frasier (1989) found in their study of diabetic

children that anxiety, distress, and disruptive and problematic behaviors increased when family support for the child was decreased. Holmes et al. (1999) studied the interactional effects of diabetes, behavior problems and family environment factors in a group of children with diabetes. Analyses indicated that higher scores on measures of family cohesion and lower scores on measures of family conflict predicted lower internalizing and externalizing behaviors reported in diabetic children. Additionally, stronger correlations were found between severity of diabetic symptoms and externalizing behaviors for children reporting high family conflict as compared to those reporting lower family conflict. Holmes et al. (1999) speculated that family conflict presents an additional stressor to these families that creates more severe disruptions in child functioning.

The role of family functioning in self-competence and coping styles in children has been examined in a number of studies. Hauser, Jacobson, Wertlieb, Brink, and Wentworth (1985) found that family environments characterized by independence, organization, and involvement in recreation activities were related to better adjustment and increased feelings of self-competence in diabetic children. This outcome is relevant as Parcel et al. (1994) found self-competence to be the strongest predictor of children's adherence to medical requirements in their study of families with children with cystic fibrosis. The association between family functioning and children's feelings of self-competence has also been shown in the general parenting literature. Families that are higher on emotional expression, parent-child communication, and democratic parenting styles tend to have children with stronger feelings of self-competence than families lower

in these factors (Carson, Chowdhury, Perry, & Pati, 1999; Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987).

The ability of children to cope with chronic stressors can also be influenced by family environment and parenting factors. Studies on family factors and coping in diabetic children are relatively sparse. However, studies in the general parenting literature have found that families characterized by warm and responsive parenting, high cohesion, close monitoring and appropriate parent-child communication have children who report more appropriate and active coping strategies than children in families with more negative parenting (Hardy, Power, & Jaedicke, 1993; Kliewer, Fearnow, & Miller, 1996; McIntyre & Dusek, 1995).

Coping in Children with Diabetes

The strategies that children use to cope with a chronic stressor can have important implications for children's functioning as well. In general, children who are not able to use appropriate coping strategies may experience subsequent psychological distress and poor physical health (Compas, Malcarne, & Fondacaro, 1988; Spirito, Stark, Gil, & Tye, 1995). As with many chronic illnesses, diabetes may present children with additional challenges that require them to utilize coping resources. For instance, coping style was found to be significantly correlated with the level of metabolic control in adolescents with diabetes (Delamater, Kurtz, Bubb, White, & Santiago, 1987). Similarly, Jacobson et al. (1990) found a significant correlation between children's coping strategies and diabetes-related compliance. In studies examining adults with diabetes, Edwards (1999) found that use of active coping strategies was associated with increased diabetic adherence. Kvam and Lyons (1991) found that adult diabetics who used a problem-

solving coping style had better overall health than those who used a wish-fulfillment coping style. Children with a chronic illness are faced with a number of illness-related stressors (e.g., daily medical regimens, risk of hospitalizations or death), and their responses to these stressors may influence not only their adjustment to the illness but the severity of the illness as well (Spirito, Stark & Williams, 1988). Generally, utilization of coping strategies aimed at dealing with stressors directly (i.e., approach or problem-solving strategies) is related to better functioning, while strategies that try to avoid the stressor are related to poorer adjustment (Causey & Dubow, 1992).

Goals of Present Study

As studies have consistently shown a relation between poor metabolic control in diabetic children and increased risk for serious complications and psychological problems, it is important to identify variables related to better metabolic control. One area that has received relatively little attention in the study of outcomes in diabetic children is the role of specific parenting practices. Studies on parenting practices and general child outcomes indicate that dysfunctional parenting behaviors put children at risk for increased behavior problems. Dysfunctional parenting behaviors may increase in the presence of family stress, which is present in many families with diabetes. Studies that have examined parenting variables in diabetic families tend to look more at broad parenting dimensions and examine limited child outcomes related to parenting (i.e., metabolic control) (Anderson et al., 1981; Liss et al., 1998; Waller et al., 1986). Based on previous literature, it is suggested that parental support and a cohesive, non-conflictual family environment are needed in order to maintain the physical and psychological health of diabetic children (Waller et al., 1986). However, knowledge is still limited as to what

parenting practices reinforce appropriate diabetic monitoring and compliance, child feelings of self-competence, and positive coping strategies by diabetic children. The relation between specific parenting behaviors and psychological functioning in children with diabetes is still an area for investigation.

The aims of the present study included assessment of the relations between family environment variables, parental stress, parenting behaviors, and child psychological functioning, diabetic adherence, and coping styles. Differences in these variables were examined between diabetic and non-diabetic families. Diabetic children were expected to report more behavior and emotional problems and poorer self-concepts than healthy peers. Parents of children with diabetes were hypothesized to report higher levels of parental stress and negative family environments (i.e., family conflict) due to the adjustments and limitations imposed by the chronic illness. Families with diabetic children were expected to endorse greater parental monitoring and supervision and less laxness in discipline than control families due to the greater number of daily responsibilities in diabetes management. However, it was also hypothesized that parents of diabetic children may concurrently endorse other, less effective parenting strategies (i.e., overreactivity, verbosity, less positive parenting) than control families due to the presumed impact of greater parental stress (e.g., Abidin, 1995). Furthermore, previous literature regarding parenting practices and non-compliant child behaviors (e.g., Arnold et al., 1993; Shelton, Frick, & Wootton, 1996) indicates that parenting behaviors characterized by inconsistent and lax discipline and poor supervision predicts poorer psychological outcomes (e.g., emotional and behavioral problems, lower self-concept) in children. Therefore, children with diabetes were expected to report greater depression

and anxiety and lower self-concept when parents endorsed less effective parenting strategies. Additionally, previous findings of Webster-Stratton (1990) and Patterson (1982) indicate parental stress is related to child behavior problems. It was hypothesized that parents who reported higher levels of stress and negative family environment characteristics would have diabetic children with poorer adherence, more behavior and emotional problems, and lower self-competence. Finally, inappropriate coping strategies (e.g., avoidance) were hypothesized to be correlated with negative outcomes (e.g., depression, behavior problems) in children.

CHAPTER II

METHOD

Participants

Children with diabetes were recruited through the local American Diabetes Association to participate in the study. Inclusion criteria included a diagnosis of Type I diabetes at least 6 months prior to participation in the study and the absence of secondary disease complications (e.g., retinopathy, neuropathy) and other major medical diseases (e.g., cystic fibrosis). Children without diabetes were recruited through local community organizations, matched to diabetic children on age and gender, and served as control participants in the study. Additionally, one parent from each family self-selected to participate in the study. Participants in the final sample included sixty children identified as diabetic ($n = 30$) or non-diabetic ($n = 30$). Children ranged in age between 8 and 16, ($M = 12.1$, $SD = 2.1$), and male children accounted for 60% ($n = 36$) of the total sample. Within the subsample of diabetic children, the mean age at diagnosis was 7.3 ($SD = 3.2$). Parents in the final sample consisted of 53 mothers and 7 fathers with a mean age of 40.3 ($SD = 4.7$). Ninety-eight percent of participants were Caucasian, with remaining families identifying themselves as Hispanic or Multiethnic.

Analyses were conducted to test for group differences on demographic variables. Results from Chi-square analyses (see Table 1) indicated no significant differences between diabetic and non-diabetic families for child gender ($p < 1.01$), child ethnicity

Table 1. Demographic Characteristics and Preliminary Analyses for Groups

	Diabetic (n = 30)	Non-diabetic (n = 30)	X^2/t
Child gender			
Female	n = 12	n = 12	
Male	n = 18	n = 18	0.00
Child age	12.2 (2.04)	11.93 (2.26)	0.48
Child ethnicity			
Caucasian	n = 27	n = 30	
Hispanic	n = 1	n = 0	
African-American	n = 0	n = 0	
Multiethnic	n = 2	n = 0	3.16
Present counseling			
Yes	n = 2	n = 2	
No	n = 28	n = 23	0.04
Past counseling			
Yes	n = 7	n = 2	
No	n = 23	n = 28	3.27[b]
Parent gender			
Female	n = 26	n = 27	
Male	n = 4	n = 3	0.16
Parent age	39.63 (4.20)	41.03 (5.15)	1.15
Parent ethnicity			
Caucasian	n = 29	n = 30	
Hispanic	n = 0	n = 0	
African-American	n = 0	n = 0	
Multiethnic	n = 1	n = 0	1.02
Parent education			
High school/GED	n = 7	n = 5	
2-year College/Tech	n = 9	n = 5	
4-year College	n = 10	n = 15	
Master's Degree	n = 4	n = 3	
Other Post-Graduate	n = 0	n = 2	4.62

[b] = borderline significant result ($p < .08$)
*$p < .05$, **$p < .01$,

($p < .21$), parent ethnicity ($p < .32$), parent gender ($p < .69$) and parent education ($p < .33$). An independent sample t-test revealed no significant differences between diabetic and non-diabetic participants in terms of parent age, $t\ (58) = 1.15$, $p < .25$. Additional Chi-square analyses found no significant differences between groups in terms of children's participation in previous ($p < .08$) or current ($p < .87$) counseling services. However, there did appear to be a trend for diabetic children ($n = 7$) to report greater participation in past counseling than non-diabetic children ($n = 2$).

Measures

The measures included in the present study examined variables of family environment, parenting practices, and parental stress, as well as psychological outcomes, coping, self-competence, and diabetic adherence in children. Measures were completed by the participating child and one parent. Parents were asked to complete measures for child functioning with the participating child in mind.

Parent Measures

The Family Environment Scale (FES; Moos & Moos, 1994) is a self-report questionnaire that assesses dimensions of the family environment. The FES has three forms available, measuring people's perceptions, preferences, or expectations of their family environment. Form R of the FES was selected for the current study in order to assess participating parents' current perceptions of their family environment. The FES consists of 90 items that are divided into 10 subscales measuring various dimensions of the family environment. Each subscale contains 9 true-false items, with subscale scores ranging from 0 to 9. Parents report whether they perceive each item as true or false for their family. In this study, the parent was asked to answer all items on the FES; however,

responses for selected subscales were included in the following analyses based upon findings of previous studies (Anderson et al., 1981, Waller et al., 1986). The FES subscales of Cohesion, Conflict, Expressiveness, Organization, and Control were chosen to provide information on dimensions of relationships, personal growth, and system maintenance in participating families. The FES is a widely used instrument with good reliability. Internal consistency coefficients for the 10 subscales range from .61 to .78, and 2-month test-retest reliabilities range from .52 to .89 (Moos & Moos, 1994). The construct validity of the FES has been demonstrated by its significant correlation with an established measure of family functioning (e.g., FACES; Olson, Portner, & Lavee, 1985). Additionally, the FES has been found to discriminate successfully between various groups (e.g., youth with behavior problems) based on subscale scores (Moos & Moos, 1994).

The parent-version of the Child Behavior Checklist (CBCL; Achenbach, 1991) was also included in order to measure problematic behaviors in participating children. This is a 118-item self-report questionnaire that assesses behaviors in children aged 4 to 18. Parents rate how much each item describes their own child using a 3-point response scale, ranging from 0 ("not true") to 2 ("very true"). Responses can be organized into eight individual subscale scores; however, composite measures of Internalizing, Externalizing, and Total problems were computed to provide measures of child functioning. Scores on individual subscales (e.g., Withdrawn, Attention Problems) were not selected for analyses in the present study in order to reduce potential risk of Type I errors, and the composite scales have been found to provide appropriate indices of child behavior problems (Achenbach, 1991). Standardized scores (T scores) are computed

separately for boys and girls according to age, and T scores above 70 are recognized as clinically significant for problem areas. The CBCL is a widely used instrument with good validity and reliability. Reliability coefficients for one-week test-retest intervals have been found to be .89 for problem scales (Achenbach, 1991). Correlations for individual problem scales have been analyzed separately for boys and girls, and ranged from .63 to .97. Measures of validity indicate that the CBCL is able to differentiate significantly clinically-referred children with behavior problems from non-referred children, and CBCL total problem scores are significantly correlated with scores on the Conners' (1973) Parent Rating Scale (Achenbach, 1991).

Child behaviors were further measured using the Disruptive Behavior Rating Scale (Barkley & Murphy, 1998). This measure consists of 26 items measuring symptoms of inattention, hyperactivity/impulsivity, and oppositional behavior consistent with diagnoses of Attention-Deficit, Hyperactivity Disorder and Oppositional Defiant Disorder. Using a 4-point Likert-type scale of responses ranging from 0 ("never or rarely") to 3 ("very often"), parents indicate how often the identified behaviors occur for their child. An additional 15 items assess for symptoms of Conduct Disorder using a "Yes/No" response set. Responses to the Oppositional Defiant subscale (DBRS-ODD) were chosen for analyses in the current study in order to provide a measure of externalizing behavior problems. There has not been relevant research to indicate that symptoms of attention, hyperactivity, or conduct problems are related to diabetic functioning.

Parenting style was assessed with the Alabama Parenting Questionnaire (APQ; Shelton, Frick, & Wootton, 1996). The APQ is a self-report questionnaire that evaluates

reported parenting practices across a variety of domains using either parent or child self-report. The parent self-report measure was chosen for the current study due to better validity than the child self-report measure (Shelton, Frick & Wootton, 1996). The APQ contains 42 items that measure the areas of parenting most often related to child behavior problems. Using a 5-point frequency scale, parents indicate how often identified behaviors occur in their home. For example, in response to the item "Your child goes out without a set time to be home", parents respond how frequently this typically occurs, ranging from "never" to "always." The APQ yields 5 factors of parenting practices identified as Involvement, Positive Parenting, Monitoring and Supervision, Inconsistent Discipline, and Corporal Punishment. Validity of the APQ subscales has been found to be good (Shelton et al., 1996). Additionally, measures of internal consistency have been found to range from .46 (Corporal Punishment) to .80 (Involvement and Positive Parenting). Due to the low internal consistency score for the Corporal Punishment subscale (Shelton et al., 1996), along with the absence of research relating corporal punishment to functioning in diabetic children, this subscale was not included in analyses for this study.

The Parenting Scale (Arnold et al., 1993) was also administered to provide an indicator of parenting practices among participating families. This is a 30-item rating scale yielding three scales of discipline practices, as well as a total score of overall parenting effectiveness. Parents report how they typically respond to a child's misbehavior using a 7-point response scale. For example, following a statement such as "When I give a fair threat or warning" parents indicate where their typical behavior lies on a continuum between "I often don't carry it out" and "I always do what I said." The

Laxness subscale includes 11 items that assess permissive discipline practices, the Overreactivity subscale contains 10 items measuring parental irritability or anger in response to a child, and the Verbosity subscale, consisting of 7 items, measures the presence of lengthy verbal responses by parents. Arnold et al. (1993) found that parents who engaged in lax, verbose, or overreactive discipline practices were more likely to have children who displayed problematic and noncompliant behaviors. The Parenting Scale has been found to have a 2-week test-retest reliability coefficient of .84 for the Total score, and reliability coefficients of .79 to .83 for the three subscales (Arnold et al., 1993). Validity of the Parenting Scale has been demonstrated through its ability to differentiate between clinically-referred children with behavior problems and nonclinical groups on the Laxness, Overreactivity and the Parenting Scale Total score. Additionally, significant correlations (.22 to .54) were found between the Parenting Scale subscales and Achenbach's (1991) CBCL Total score.

The level of parental stress experienced by participating parents was measured with the Parenting Stress Index – Third Edition (PSI; Abidin, 1995). The PSI was developed to assess the types of stressors related to parenting, and to identify those stressors that are related to dysfunctional parenting and child behavior problems. Parents were asked to complete the PSI Short Form (PSI/SF), consisting of 36 items. The PSI/SF was developed from the full-length PSI using factor analysis and contains similarly worded, but fewer items than the PSI. The PSI/SF yields measures of Parental Distress (PSI-PD), Parent-Child Dysfunctional Interactions (PSI-CDI), and Difficult Child (PSI-DC). In addition, it also provides a Total Stress score (PSI-Total) that relates the overall level of stress experienced by the parent in his/her parenting role. Parents

indicate how strongly they agree or disagree with statements using a 5-point Likert scale. The PSI and the PSI/SF have been found to have good reliability and validity. The PSI/SF yields 6-month test-retest coefficients of .68 to .85 for the three subscales and .84 for the Total Stress score. Internal consistency coefficients range from .80 to .87 for subscale scores; the internal consistency coefficient for the Total Stress score has been found to be .91. There is no direct data at this time related to the validity of the PSI/SF; however, as it was derived from the PSI and is highly correlated with it, it is most likely a valid measure (Abidin, 1995). The content and predictive validity of the full-length PSI has been shown in approximately 300 studies that have used it (Abidin, 1995).

Parents in the diabetic group also completed several additional measures. A brief, 8-item questionnaire was developed by the author in order to assess parental perceptions of diabetic adherence in their children. Parents provide information on the number of hospitalizations, level of compliance and control, and recent HbA1c levels using a 3-point Likert scale. Additionally, parents of diabetic children completed the Issues in Coping with IDDM – Parent Scale (ICI-P; Kovacs, Iyengar, Goldston, Stewart, Obrosky, & Marsh, 1990b). This is a 52-item questionnaire which consists of two sections that assesses the parent's difficulty with diabetes management issues, as well as the distress experienced by parents in relation to their child's illness. Responses are given using a 5-point Likert scale, with responses ranging from 'not distressing/hard to do" to "very distressing/hard to do." Information on the psychometric properties of the ICI-P is indicative of adequate reliability and convergent validity (Kovacs et al., 1990b).

Child Measures

The Multidimensional Anxiety Scale for Children (MASC; March, 1997) is a 39-item self-report measure administered to children in the study. The MASC was designed to assess anxiety in a number of areas in children and adolescents aged 8 to 19. Children are given statements about possible thoughts, feelings or behaviors and indicate how often each statement is true about themselves. Responses are given utilizing a 4-point Likert-type scale, with 0 indicating "never true about me" and 3 indicating "often true about me." The MASC is organized into four basic anxiety scales, identified as Physical Symptoms, Harm Avoidance, Social Anxiety, and Separation/Panic, and a Total Anxiety Scale. Within subscales, anxiety is further differentiated into symptoms of tension and autonomic arousal (i.e., Physical Symptoms), perfectionism and anxious coping (i.e., Harm Avoidance), and rejection and public performance fears (i.e., Social Anxiety). Internal reliability measures revealed coefficients from .50 to .86 for basic scale scores in males and females, and .89 and .88 for Total Anxiety scores for males and females, respectively. Test-retest reliability over a 3-month interval indicated excellent stability with a coefficient of .93 for the Total Anxiety measure. The MASC has been found to show appropriate convergent validity with similar measures, and discriminant validity in correctly differentiating between anxious children and non-anxious controls (March, 1997).

The presence of depressive symptoms in participating children was assessed with the Children's Depression Inventory (CDI; Kovacs, 1992). This 27-item self-report measure is appropriate for children and adolescents aged 7 to 17 years, and provides information on a variety of symptoms of depression. The format of the CDI provides the

child with an item that contains three sentences describing a feeling or idea to various degrees. The child is then asked to choose which sentence best describes how she/he has felt over the past two weeks using a three-choice response format. Scores of 0, 1, or 2, correspond to the absence, mild presence, or definite presence of the construct, respectively. Total scores range from 0 to 54, and are classified into scales of Negative Mood, Interpersonal Problems, Ineffectiveness, Anhedonia, Negative Self-esteem, and a Total score. Standardized scores are provided separately for males and females. The CDI is a well-established measure with documented reliability and validity. The internal consistency coefficient for the Total score in the normative sample was .86, and 2-week test-retest reliability coefficients range from .50 to .87. The discriminant and concurrent validity of the CDI have been well-documented in various studies utilizing the measure (Kovacs, 1992).

The Self-Perception Profile for Children (SPPC; Harter, 1985) is a 36-item self-report measure of self-concept. Self-concept has also been described as feelings of self-competence or self-worth. The SPPC consists of five subscales, Scholastic Competence, Social Acceptance, Athletic Competence, Physical Appearance, Behavioral Conduct, and an overall Global Self-Worth index. The measure utilizes a response format that attempts to reduce the impact of social desirability on children's responses. For each item, the child is given two descriptions of children in various areas and asked to choose which description best fits himself/herself. Descriptions included statements such as "Some kids feel they are very good at their schoolwork" but "Other kids worry about whether they can do the work assigned to them." Children then rate whether the chosen description is "sort of true for me" or "really true for me." Items are scored from 1 to 4,

with higher scores reflecting more perceived competence. Internal consistency of the measure is good with coefficients ranging from .71 to .86 for subscales. Additionally, adequate construct and discriminant validity has been demonstrated (Harter, 1982).

The general coping styles of participating children was assessed with the Children's Coping Strategies Checklist – Revised (CCSC-R; Ayers et al., 1996). This 54-item questionnaire asks children to rate how often they use strategies described to solve problems and make themselves feel better. Responses are coded using a Likert-type scale and range from 1 ("never") to 4 ("most of the time"). The CCSC-R consists of 11 dimensions of coping styles, which are combined into four factors of Active Coping, Distraction, Avoidance and Support-Seeking. Reliability and validity for the CCSC-R has been demonstrated to be adequate. Internal consistency coefficients range from .65 to .88 for the four factors, and coefficients for a one-week test-retest interval range from .64 to .80 for the four factors. Previous studies have demonstrated validity to be adequate (Ayers, et al., 1996; Sandler et al., 1994).

Children with diabetes also completed two additional questionnaires. The Kidcope checklist (Spirito, Stark, & Williams, 1988) is a brief self-report measure that was administered to the diabetic group only in order to assess the coping styles it used in response to a diabetes-related stressor. The Kidcope checklist is available in either a version for younger children (7-12 years) or older children (13-18 years). The present study used the version for younger children in order to ensure consistent understanding of concepts across participant age ranges. The version of the Kidcope for younger children contains 15 items that assess 10 coping styles children may use. Each item has a frequency scale ("How often did you do this?") and an efficacy scale ("How much did it

help?"). Children were asked first to respond to the frequency item using a "yes/no" response, and then answer the efficacy questions if the frequency item response was positive (i.e., "yes"). The Kidcope has been found to have test-retest reliability ranging from .41 to .83 when measured over short periods of 3 or 7 days (Spirito et al., 1988). Studies on the convergent validity of Kidcope indicate that it effectively identifies coping strategies for children (Spirito et al., 1988).

Children in the diabetic group also completed the Issues in Coping with IDDM-C (ICI-C; Kovacs, Iyengar, Goldston, Stewart, Obrosky, & Marsh, 1990a), a 28-item questionnaire composed of two parts. First, children report on the difficulties they experience in their diabetes management tasks (e.g., insulin injections), and next, they indicated how much distress is experienced due to aspects of having diabetes (e.g., talking about diabetes). Responses are given using a 5-point Likert scale, with responses ranging from "not distressing/hard to do" to "very distressing/hard to do." Test-retest reliability coefficients at 6-months were .65 and .52, respectively, for the two sections (Kovacs et al., 1990a).

Procedures

Children with diabetes were recruited through the local American Diabetes Association (ADA) based upon their participation in a summer diabetes camp. Families of children who had attended camp the previous year were mailed a letter from the ADA outlining the study, and personal information (e.g., name, telephone number) was unavailable to the author unless provided by the family. Interested families returned their form in a pre-paid envelope and the principal investigator contacted each family to schedule a meeting time with one parent and the target child. Meetings with families

were conducted in person at either families' homes or university departments, depending upon families' preferences. Children without diabetes who served as controls in the study were selected based upon matching age and gender to diabetic children. Recruitment was conducted through advertisements in local community agencies (e.g., YMCA, Community Centers) and through local cable television stations. Interested families contacted the investigator and provided limited demographic information (e.g., age and gender of child) to determine eligibility. Parents initially completed an informed consent form that identified the purpose, risks and benefits of the study, and children were also asked to provide their assent to participate in the study. Questionnaires were administered to all participants in a standardized procedure. Once consent was obtained, parents completed the appropriate questionnaires in a separate area while the investigator read all child measures to participating children in order to control for differences in reading ability. Completing questionnaires and interviews of children lasted approximately 45-60 minutes per family, and each family was paid $15 for its participation.

CHAPTER III

RESULTS

Preliminary analyses included examination of mean scores on the dependent variables of interest and correlational analyses. Table 2 presents the means and standard deviations for measures of family environment, parental stress, and parenting behaviors, according to group. The means and standard deviations for measures of child behavior, depression, anxiety, self-perception, and coping strategies in diabetic and non-diabetic children are presented in Table 3.

Table 2. Means and Standard Deviations for Family Functioning Variables by Group

Variable	Diabetic n = 30	Nondiabetic n = 30
FES Cohesion	7.70 (1.58)	7.00 (2.10)
FES Expressiveness	6.03 (1.99)	6.31(1.14)
FES Conflict	2.13 (1.72)	3.03 (2.11)
FES Organization	6.23 (2.25)	5.59 (2.53)
FES Control	4.73 (1.68)	4.83 (1.75)
PSI-PD	24.17 (9.41)	24.45 (9.12)
PSI-DC	22.90 (9.83)	25.45 (9.01)
PSI-CDI	20.63 (9.56)	22.07 (8.76)
PSI-Total	67.70 (26.68)	71.97 (23.97)
PS Overreactivity	3.08 (.80)	3.14 (.73)
PS Laxness	2.96 (.69)	3.14 (.73)
PS Verbosity	3.96 (.94)	3.96 (1.01)
APQ Involvement	41.27 (3.54)	41.27 (3.54)
APQ Supervision	16.01 (4.44)	16.69 (4.68)
APQ Positive	25.77 (2.43)	23.83 (3.56)
APQ Inconsistency	12.53 (3.11)	13.00 (2.90)

Note. Standard deviations appear in parentheses

Table 3. Means and Standard Deviations for Child Outcome Variables by Group

Variable	Diabetic n = 30	Nondiabetic n = 30
CBCL Internalizing	48.37 (14.97)	49.13 (8.27)
CBCL Externalizing	43.97 (10.36)	45.97 (10.25)
CBCL Total	44.20 (13.44)	46.73 (9.23)
DBRS Oppositional	4.20 (5.05)	4.73 (4.34)
CDI Anhedonia	45.07 (6.83)	47.23 (8.09)
CDI Negative Mood	44.50 (6.13)	45.03 (5.68)
CDI Ineffectiveness	42.47 (5.60)	42.90 (5.51)
CDI Interpersonal Problems	47.53 (7.15)	46.60 (5.47)
CDI Negative Self-esteem	44.27 (6.74)	44.80 (5.50)
CDI Total	43.00 (6.63)	43.92 (6.20)
MASC Physical Symptoms	46.83 (6.62)	49.33 (6.73)
MASC Harm Avoidance	48.77 (7.88)	50.07 (9.54)
MASC Social Anxiety	49.50 (9.86)	52.67 (12.26)
MASC Separation Anxiety	45.63 (6.83)	54.53 (11.53)
MASC Total	47.37 (7.05)	52.33 (10.31)
SPPC School	3.32 (.49)	3.20 (.70)
SPPC Social	3.19 (.74)	2.88 (.76)
SPPC Athleticism	3.27 (.58)	2.88 (.74)
SPPC Physical Appearance	2.96 (.64)	3.08 (.81)
SPPC Behavioral Conduct	3.24 (.60)	3.32 (.64)
SPPC Global	3.42 (.51)	3.28 (.66)
CCSC Active	2.77 (.54)	2.65 (.51)
CCSC Avoidant	2.52 (.44)	2.55 (.56)
CCSC Support-Seeking	2.29 (.63)	2.17 (.62)
CCSC Distraction	2.30 (.61)	2.12 (.59)
Last HbA1c	8.43 (1.46)	-----
Total Compliance	10.00 (4.78)	-----

Note. Standard deviations appear in parentheses; CBCL, CDI, and MASC scores are presented as T scores

Pearson-Product Correlation Analyses

Analyses were computed for variables of interest in the diabetic and non-diabetic groups separately. Given the large number of correlational analyses and the potential risk for Type I errors, criterion were set so that only results meeting minimum requirements were interpreted and presented. Minimum requirements included that the correlation

have a minimum magnitude of .40, which was determined in order to select correlations that were within a more conservative range of significance (e.g., $p < .01$). Additionally, a pattern of significant correlations (>3) between a variable and other conceptually-related constructs fulfilled an alternative minimum requirement. Results are presented below, according to relationships between parenting measures (e.g., FES, APQ) and child outcome (e.g., CBCL, SPPC) measures. All correlations were in expected directions, unless noted, and significance was measured at $p < .05$.

First, correlations were examined for family environment and child outcomes for diabetic and non-diabetic groups separately; results are presented in Tables 4 and 5, respectively. Scores on the FES Conflict subscale were significantly positively related to DBRS, CBCL Externalizing, CBCL Total, and SPPC Behavior scores across both groups. In addition, significant positive relationships were found between FES Conflict and CBCL Internalizing, CDI Interpersonal, CDI Self-esteem, and CDI Total in the diabetic group. Significant negative relationships were found between FES Conflict and CDI Ineffectiveness and SPPC Global scales in the non-diabetic group. The FES Cohesion subscale was significantly negatively correlated with the DBRS, CBCL Externalizing, and CBCL Total scales, and significantly positively related to the SPPC Physical subscale in the diabetic group. Higher scores on FES Cohesion were significantly associated with lower scores on CDI Anhedonia, CDI Ineffectiveness, CDI Self-esteem, CDI Total, and CCSC Avoidance in the non-diabetic group. Furthermore, significant positive relationships were found between FES Cohesion and SPPC subscale (e.g., Physical, Behavioral, Global) scores in the non-diabetic group. The FES subscale of Control was significantly positively correlated with subscales DBRS, CBCL Total,

Table 4. Correlations Between Family Environment, Parental Stress, and Child Outcome Measures in Diabetic Children

	Cohes	Expr	Confl	Org	Confl	PD	CDI	DC	PSI-T
DBRS	-.46*	-.28	.53**	-.01	.41*	.50**	.74**	.87**	.76**
CBCL									
Internalizing	-.32	-.44*	.55**	-.13	.42*	.58**	.63**	.51**	.58**
Externalizing	-.39*	-.24	.57**	.09	.47**	.47**	.69**	.83**	.72**
Total	-.41*	-.42*	.62**	-.06	.51**	.52**	.73**	.71**	.71**
CDI									
Anhedonia	-.25	.14	.24	-.17	.05	.20	.11	.34	.23
Negative Mood	-.21	.12	.28	-.19	.06	.28	.06	.18	.19
Ineffective	-.13	.14	.19	-.13	.07	.12	.05	.22	.14
Self-esteem	-.22	.16	.43*	-.33	.22	.29	.16	.36	.29
Interpersonal	-.20	.15	.38*	.07	.10	.34	.22	.48**	.38*
Total	-.27	.20	.55**	-.19	.10	.31	.14	.41*	.31
MASC									
Harm	.35	.23	-.27	.07	-.44*	-.42*	-.35	-.33	-.39*
Physical	.02	.12	.00	.06	-.07	-.03	.06	.10	.05
Social	.00	.32	-.10	.04	-.14	-.21	-.24	-.22	-.24
Separation	.05	.24	-.04	.51**	-.18	-.07	-.05	-.04	-.05
Total	.12	.34	-.14	.18	-.25	-.27	-.20	-.17	-.23
SPPC									
School	.33	-.04	-.08	-.08	-.28	-.04	-.12	-.32	-.18
Social	-.06	-.17	-.14	-.15	.01	-.22	-.12	-.23	-.20
Athletic	-.23	-.26	.13	-.20	.08	.00	.10	-.02	.03
Physical	.42*	-.07	-.12	-.24	-.25	-.05	-.08	-.14	-.10
Behavior	.38*	-.04	-.54**	.03	-.40*	-.32	-.38*	-.53**	-.44*
Total	.02	-.21	-.09	-.31	-.01	-.21	-.14	-.19	-.19
CCSC-R									
Active	.10	-.22	-.04	-.35	-.10	-.10	-.08	-.09	-.10
Avoid	.24	-.01	.02	-.07	.05	-.23	-.24	-.12	-.21
Support	.18	-.27	-.31	-.11	-.04	-.16	-.16	-.22	-.19
Distract	.13	.05	-.20	-.04	-.21	-.20	-.33	-.30	-.30

Note. Cohes = FES Cohesion; Expr = FES Expressiveness; Confl = FES Conflict; Org = FES Organization; Contr = FES Control; PD = PSI PD; CDI = PSI CDI; DC = PSI DC; PSI-T = PSI Total

*$p < .05$, **$p < .01$

Table 4. Correlations Between Family Environment, Parental Stress, and Child Outcome Measures in Diabetic Children

	Cohes	Expr	Confl	Org	Confl	PD	CDI	DC	PSI-T
DBRS	-.46*	-.28	.53**	-.01	.41*	.50**	.74**	.87**	.76**
CBCL									
Internalizing	-.32	-.44*	.55**	-.13	.42*	.58**	.63**	.51**	.58**
Externalizing	-.39*	-.24	.57**	.09	.47**	.47**	.69**	.83**	.72**
Total	-.41*	-.42*	.62**	-.06	.51**	.52**	.73**	.71**	.71**
CDI									
Anhedonia	-.25	.14	.24	-.17	.05	.20	.11	.34	.23
Negative Mood	-.21	.12	.28	-.19	.06	.28	.06	.18	.19
Ineffective	-.13	.14	.19	-.13	.07	.12	.05	.22	.14
Self-esteem	-.22	.16	.43*	-.33	.22	.29	.16	.36	.29
Interpersonal	-.20	.15	.38*	.07	.10	.34	.22	.48**	.38*
Total	-.27	.20	.55**	-.19	.10	.31	.14	.41*	.31
MASC									
Harm	.35	.23	-.27	.07	-.44*	-.42*	-.35	-.33	-.39*
Physical	.02	.12	.00	.06	-.07	-.03	.06	.10	.05
Social	.00	.32	-.10	.04	-.14	-.21	-.24	-.22	-.24
Separation	.05	.24	-.04	.51**	-.18	-.07	-.05	-.04	-.05
Total	.12	.34	-.14	.18	-.25	-.27	-.20	-.17	-.23
SPPC									
School	.33	-.04	-.08	-.08	-.28	-.04	-.12	-.32	-.18
Social	-.06	-.17	-.14	-.15	.01	-.22	-.12	-.23	-.20
Athletic	-.23	-.26	.13	-.20	.08	.00	.10	-.02	.03
Physical	.42*	-.07	-.12	-.24	-.25	-.05	-.08	-.14	-.10
Behavior	.38*	-.04	-.54**	.03	-.40*	-.32	-.38*	-.53**	-.44*
Total	.02	-.21	-.09	-.31	-.01	-.21	-.14	-.19	-.19
CCSC-R									
Active	.10	-.22	-.04	-.35	-.10	-.10	-.08	-.09	-.10
Avoid	.24	-.01	.02	-.07	.05	-.23	-.24	-.12	-.21
Support	.18	-.27	-.31	-.11	-.04	-.16	-.16	-.22	-.19
Distract	.13	.05	-.20	-.04	-.21	-.20	-.33	-.30	-.30

Note. Cohes = FES Cohesion; Expr = FES Expressiveness; Confl = FES Conflict; Org = FES Organization; Contr = FES Control; PD = PSI PD; CDI = PSI CDI; DC = PSI DC; PSI-T = PSI Total

*$p < .05$, **$p < .01$

Table 5. Correlations Between Family Environment, Parental Stress, and Child Outcome Measures in Non-diabetic Children

	Cohes	Expr	Confl	Org	Contr	PD	CDI	DC	PSI-T
DBRS	-.30	-.19	.51**	-.33	.17	.40*	.65**	.77**	.68**
CBCL									
Internalizing	-.24	-.16	.33	-.52**	-.03	.52**	.44*	.60**	.58**
Externalizing	-.39*	-.24	.57**	-.35	.47**	.29	.60**	.66**	.58**
Total	-.34	-.17	.50**	-.55**	.07	.46*	.66**	.71**	.68**
CDI									
Anhedonia	-.48**	.09	.21	-.22	-.09	.23	.34	.13	.26
Negative Mood	-.21	-.03	.30	-.22	.23	.47*	.26	.21	.35
Ineffective	-.66**	-.06	.49**	-.50**	.02	.45*	.43*	.22	.41*
Self-esteem	-.39*	.01	.22	-.11	-.17	.12	.24	.06	.16
Interpersonal	-.26	.25	.18	-.06	.12	.15	.13	-.08	.07
Total	-.56**	.07	.35	-.30	.00	.38*	.41*	.17	.36
MASC									
Harm	-.01	.11	.09	-.17	-.25	.22	-.05	-.12	.06
Physical	-.22	.01	.16	-.07	-.10	.11	-.07	-.01	-.02
Social	-.52**	-.01	.20	-.17	-.18	.25	.21	.04	.19
Separation	-.08	.16	-.02	-.10	-.38*	.16	-.20	-.18	-.08
Total	-.35	.07	.17	-.20	-.29	.26	.02	-.06	.08
SPPC									
School	.35	.10	-.29	.33	-.30	-.39*	-.32	-.33	-.39*
Social	.38*	-.15	-.07	.08	.22	-.08	-.30	-.14	-.19
Athletic	.00	-.10	-.05	.05	-.12	-.15	-.31	-.33	-.29
Physical	.40*	.17	-.23	.14	-.07	-.16	-.24	.02	-.14
Behavior	.40*	-.12	-.46*	.22	-.04	-.29	-.34	-.25	-.33
Total	.69**	.03	-.49**	.37*	.14	-.36	-.48**	-.20	-.39*
CCSC-R									
Active	.01	.17	-.05	.02	-.35	-.11	-.11	-.24	-.17
Avoid	-.43*	-.22	.20	-.26	.18	.24	.21	.08	.20
Support	.18	.36	-.19	.12	-.22	-.06	-.02	-.06	-.05
Distract	-.02	.24	-.23	.19	.03	-.26	-.42	-.51**	-.44*

Note. Cohes = FES Cohesion; Expr = FES Expressiveness; Confl = FES Conflict; Org = FES Organization; Contr = FES Control; PD = PSI PD; CDI = PSI CDI; DC = PSI DC; PSI-T = PSI Total

*$p < .05$, **$p < .01$

CBCL Internalizing, CBCL Externalizing, and significantly negatively associated with MASC Harm Avoidance subscale in the diabetic group. No significant relationships between FES Control and measures of interest were found in the non-diabetic group. In addition, higher scores on CBCL Total and CBCL Internalizing scales were significantly correlated with lower scores on FES Expressiveness in the diabetic group only. For the FES subscale of Organization, significant negative correlations were found with CBCL Total, CBCL Internalizing, and CDI Ineffectiveness scales in the non-diabetic group, and significantly positive correlations were found with the MASC Separation subscale for the diabetic group. When examining the relationship between measures of parental stress and child outcome measures, significant positive correlations were found across groups for PSI subscale scores (i.e., PD, CDI, DC, and Total) and DBRS, CBCL Internalizing, CBCL Externalizing, and CBCL Total scores. Additionally, significant negative relationships were revealed in the diabetic group between PSI Total and PSI-DC scores and SPPC Behavior; PSI-PD and MASC Harm Avoidance scores; and PSI-DC and CDI Total and CDI Interpersonal scores. In comparison, significant negative correlations were found in the non-diabetic group between scores on PSI scales (e.g., CDI, DC, and Total) and CCSC Distraction scores, and between PSI-CDI and SPPC Global scores. Significant positive correlations were found between scores on PSI scales (e.g., PD, CDI, and Total) and scores on CDI Ineffectiveness and CDI Total scales.

Results also revealed significant correlations between measures of parenting behavior and child outcomes for the diabetic and non-diabetic groups (see Tables 6 and 7). The APQ Supervision subscale was significantly negatively related to CDI Self-Esteem and MASC Physical Symptoms scores in the diabetic group and to SPPC

Behavior and CCSC Avoidance scores in the non-diabetic group. In the non-diabetic group, significant negative correlations were found between APQ Involvement and Positive Parenting scores and DBRS scores. For children with diabetes, significant

Table 6. Correlations Between Parenting Behaviors and Outcome Measures in Diabetic Children

	Verbos	Over	Lax	Involve	Super	Positive	Incon
DBRS	.40*	.28	.39*	.02	.09	.25	.13
CBCL							
Internalizing	.24	.31	.24	.15	-.07	.37*	.09
Externalizing	.49**	.44*	.49**	.00	.15	.32	.11
Total	.43*	.43*	.40*	.09	-.01	.39*	.15
CDI							
Anhedonia	.12	.13	.05	.06	-.10	-.13	-.01
Negative Mood	-.03	.13	-.09	.08	-.39*	.15	-.06
Ineffective	-.21	.05	-.27	-.02	-.17	-.26	.07
Self-esteem	-.20	.10	-.14	.09	-.41*	-.03	-.06
Interpersonal	.20	.22	.26	.25	-.28	.15	-.06
Total	-.01	.16	-.03	.10	-.30	-.04	-.03
MASC							
Harm	.07	-.31	-.08	.10	-.26	.15	.04
Physical	-.08	-.24	-.09	.28	-.46*	.07	-.13
Social	-.05	.04	-.09	.20	-.10	-.09	-.21
Separation	-.23	.09	-.44*	.40*	-.14	.34	-.27
Total	-.08	-.16	-.20	.34	-.32	.16	-.21
SPPC							
School	-.02	-.18	.12	-.04	-.18	.03	-.06
Social	.11	-.14	.12	-.19	.20	-.10	.11
Athletic	.25	.11	.28	-.31	.24	.02	.36
Physical	-.21	-.12	-.08	.19	-.09	.30	-.24
Behavior	-.30	-.38*	-.25	.03	-.13	.17	-.19
Total	.20	-.08	.25	-.18	.11	.06	.16
CCSC-R							
Active	.22	-.20	.34	-.19	.17	-.04	.30
Avoid	.09	-.22	-.07	-.04	-.16	.01	.01
Support	-.32	-.38*	-.31	.00	-.01	.16	-.11
Distract	-.13	-.28	-.13	-.02	.05	-.05	.12

Note. Verbos = PS Verbosity; Over = PS Overreactivity; Lax = PS Laxness; Involve = APQ Involvement; Super = APQ Supervision; Positive = APQ Positive Parenting; Incon = APQ Inconsistent

*$p < .05$, **$p < .01$

Table 7. Correlations Between Parenting Behaviors and Outcome Measures in Non-diabetic Children

	Verbos	Over	Lax	Involve	Super	Positive	Incon
DBRS	.23	.24	.37*	-.57**	.16	-.49**	.30
CBCL							
Internalizing	.18	.23	.24	-.26	-.02	-.05	.32
Externalizing	.21	.17	.47**	-.36	.25	-.20	.29
Total	.29	.21	.46*	-.40*	.17	-.18	.37
CDI							
Anhedonia	-.13	.13	.01	-.35	.03	-.30	.24
Negative Mood	.26	.03	.09	.08	.25	-.01	.04
Ineffective	.37*	-.01	.37*	-.11	.20	-.13	.04
Self-esteem	-.01	.05	.29	-.01	.31	-.15	-.04
Interpersonal	.31	-.02	.05	-.12	-.05	-.23	-.01
Total	.12	.09	.15	-.21	.17	.14	.14
MASC							
Harm	-.11	-.08	-.12	.29	-.30	.18	-.08
Physical	.13	.10	.01	.11	.22	.14	-.20
Social	.03	.15	.03	-.11	.24	-.11	.08
Separation	-.10	-.13	-.28	.27	-.08	.14	-.13
Total	-.01	.02	-.10	.14	.07	.10	-.08
SPPC							
School	-.36	-.12	-.37*	.17	-.32	-.12	-.10
Social	.03	-.15	-.08	.41*	-.10	.28	-.07
Athletic	-.28	-.25	-.18	.39*	-.35	.07	-.01
Physical	-.35	-.23	-.24	.03	-.40*	.07	-.06
Behavior	-.45*	-.25	-.46*	.22	-.52**	.08	-.08
Total	-.30	-.12	-.30	.22	-.34	.30	-.16
CCSC-R							
Active	.02	-.05	-.02	.22	-.15	.03	-.09
Avoid	.39*	.12	.19	-.15	.43*	-.08	.21
Support	-.05	.09	-.03	.05	-.10	-.14	.02
Distract	.06	-.04	-.18	.10	.02	.05	-.15

Note. Verbos = PS Verbosity; Over = PS Overreactivity; Lax = PS Laxness; Involve = APQ Involvement; Super = APQ Supervision; Positive = APQ Positive Parenting; Incon = APQ Inconsistent

*$p < .05$, **$p < .01$

positive associations were found between APQ Involvement and MASC Separation scores. The PS Verbosity subscale was significantly positively correlated with DBRS,

CBCL Externalizing, CBCL Total, and CDI Ineffectiveness scores in the diabetic group, and negatively correlated with SPPC Behavior scores in the non-diabetic group.

Significant positive relationships were found in both groups between the PS Laxness subscale and DBRS, CBCL Externalizing, and CBCL Total scores. Additionally, PS Laxness was significantly negatively related to MASC Separation scores in the diabetic group, and to SPPC Behavior scores in the non-diabetic group. The PS Overreactivity subcale was significantly positively correlated with CBCL Externalizing and CBCL Total scores and negatively correlated with SPPC Behavior and CCSC Support scores in the diabetic group; however, no significant correlations were found in the non-diabetic group.

Table 8. Correlations Between Coping Strategies and Child Outcome Measures in Children with Diabetes

	Active	Avoid	Support	Distract
DBRS	-.01	-.01	-.09	-.15
Internal	.06	-.06	.18	-.25
External	-.19	-.01	-.23	-.24
Total-CBCL	-.07	-.03	.02	-.32
Anhedonia	-.33	.14	-.20	.11
Negative Mood	-.18	.06	-.29	-.10
Ineffective	.30	.20	-.01	-.04
Self-esteem	-.23	.13	-.16	-.16
Interpersonal	-.33	-.12	-.48**	-.08
Total-CDI	-.35	.11	-.30	-.04
Harm	.33	.32	.07	-.01
Physical	-.13	.23	-.16	-.01
Social Anx	-.05	-.03	-.29	-.02
Separation	-.62**	-.07	-.21	-.16
Total-MASC	-.11	.16	-.24	-.07

*$p < .05$, **$p < .01$

Table 9. Correlations Between Coping Strategies and Child Outcome Measures in Children without Diabetes

	Active	Avoid	Support	Distract
DBRS	-.30	.08	-.06	-.31
Internal	.13	.24	.17	-.19
External	-.29	.03	-.12	-.49**
Total-CBCL	-.16	.20	-.05	-.34
Anhedonia	-.32	.28	-.05	.12
Negative Mood	-.24	.46*	-.05	-.11
Ineffective	-.06	.47**	-.02	-.05
Self-esteem	-.16	.21	-.24	.04
Interpersonal	-.18	.58**	-.13	.31
Total-CDI	-.29	.49**	-.10	.09
Harm	.68**	-.11	.38*	-.02
Physical	.08	.19	.12	.19
Social Anx	.01	.44*	.12	.08
Separation	.37*	.08	.31	.27
Total-MASC	.33	.28	.29	.14

*p < .05, **p < .01

Pearson-product correlations were conducted to test for significant relationships between measures of coping and child outcome variables. Results are presented for children with diabetes and those without diabetes in Tables 8 and 9, respectively. For children with diabetes, few significant correlations were found between coping strategies and outcome variables. The CCSC Active Coping, CCSC Support-Seeking, and CDI Interpersonal subscales were negatively associated with the MASC Separation subscale. Within the non-diabetic group, the CCSC Distraction subscale was significantly negatively correlated with the CBCL Externalizing subscale, and the CCSC Avoidance Coping subscale was significantly positively related to CDI Negative Mood, CDI Ineffectiveness, CDI Interpersonal, CDI Total, and MASC Social Anxiety subscales. A

Table 10. Correlations Between Variables of Interest and Measures of Diabetic Functioning

	Age	Diag	HbA	Comp	ICIP-D	ICIP-U	ICIC-D	ICIC-U
DBRS	.28	.09	.13	-.06	.52**	.36	.14	.12
CBCL Intern	.11	.02	-.18	.04	.48**	.42*	-.07	.05
CBCL Extern	.26	.03	.23	.12	.46*	.43*	-.03	.10
Total-CBCL	.16	.04	.01	.09	.52**	.48**	-.03	.10
Anhedonia	.35	.18	-.14	-04	-.07	-.13	.41*	.35
Negative Mood	-.12	-.18	-.17	-.24	.02	.03	.41*	.34
Ineffective	-.05	-.12	-.32	-.22	-.10	-.14	.26	.28
Self-esteem	-.09	-.42*	-.26	-.22	.07	.06	.51**	.47**
Interpersonal	.02	.05	-.18	.10	.01	.04	.30	.09
Total-CDI	.10	-.07	-.24	-.15	-.04	-.06	.48**	.39*
Harm	-.32	-.07	.19	.15	-.42*	-.34	-.03	-.10
Physical	-.27	-.20	-.15	-.25	-.20	-.23	.42*	.08
Social Anx	.15	-.02	-.23	-.18	-.31	-.25	.34	.08
Separation	-.03	.06	-.31	-.02	-.12	-.08	.21	-.01
Total-MASC	-.16	-.11	-.16	-.18	-.43*	-.37*	.40*	.06
Total-SPPC	-.24	-.01	.43*	.00	-.11	-.04	-.39*	-.34
FES Cohesion	-.25	-.22	-.04	.35	-.38*	-.33	-.26	-.09
FES Conflict	-.05	-.10	-.20	-.16	.37*	.38*	-.01	.03
FES Express	.02	-.07	-.21	.06	-.63**	-.60**	.12	.08
FES Control	-.03	-.37*	.33	-.06	.51**	.58**	.05	-.03
PSI-PD	.11	.09	-.18	.04	.52**	.45**	-.02	.09
PSI-CDI	.16	.10	.01	-.07	.57**	.49**	-.05	-.07
PSI-DC	.14	-.07	.12	-.05	.48**	.38*	.06	.10
PSI Total	.15	.04	-.02	-.03	.56**	.47**	-.01	.04
PS Lax	.16	.25	.26	.07	.30	.27	-.16	.09
PS Overreact	.32	.29	-.19	-.01	.30	.37	.04	.08
PS Verbosity	.19	.29	.35	.08	.33	.35	-.08	-.04
APQ Involve	-.29	-.11	-.58**	.01	-.11	-.09	.12	-.17
APQ Supervis	.51**	.45*	.42	-.10	.01	-.01	-.25	-.05
APQ Incon	.12	.28	.14	-.20	.14	.06	-.12	.09
APQ Positive	-.32	-.20	-.01	.00	.29	.26	.01	-.01

Note. Age = Child age; Diag = Age at Diagnosis; HbA = Last level of HbA1c; Comp = Diabetes Compliance; ICIP-D = ICI-Parent Difficulty Subscale; ICIP-U = ICI-Parent Distress Subscale; ICIC-D = ICI-Child Difficulty Subscale; ICIC-U = ICI-Child Distress Subscale.

*p < .05, **p < .01

significant positive correlation was found between scores on CCSC Active Coping and MASC Harm Avoidance scales.

Finally, correlations between diabetes-specific variables (e.g., ICI, age at diagnosis) and other variables of interest were examined (Table 10). Age at diagnosis was negatively correlated with CDI Self-esteem and positively correlated with APQ Supervision. Child age was also positively correlated with APQ Supervision. Significant positive associations were found between HbA1c levels and SPPC Global scores, and negative associations were found between HbA1c levels and APQ Involvement scores. When children reported on their experiences coping with diabetes, significant positive correlations were found between ICI-C Difficulty and Distress scores and CDI Self-esteem scores. Higher scores on ICI-C Difficulty were associated with higher scores on CDI Total, MASC Physical symptoms, and MASC Total. In contrast, parental report of diabetic coping revealed that higher scores on the ICI-P Difficulty scale was associated with lower scores on MASC Total and MASC Harm Avoidance scores. Both ICI-P Difficulty and Distress scales were significantly positively associated with CBCL Externalizing, CBCL Internalizing, CBCL Total, FES Conflict, FES Control, and all PSI subscales, and negatively associated with the FES Expressiveness subscale. Furthermore, ICI-P Difficulty was positively associated with DBRS and negatively associated with FES Cohesion and MASC Harm.

Mean Group Difference Analyses

A series of multivariate analysis of variance (MANOVA) was conducted in order to examine hypothesized differences between the diabetic and non-diabetic groups (see Table 11). Group membership served as the independent variables in all analyses of

Table 11. Series of Multivariate Analysis of Variance for Family Functioning and Child Outcome Measures

Dependent Variable	df	F	p
FES	5	.733	.602
PSI	3	.545	.653
PS	3	.821	.488
APQ	4	1.775	.147
Internalizing Behaviors	3	1.536	.215
Externalizing Behaviors	2	.298	.754
SPPC	5	1.777	.133
CCSC-R	4	.547	.702

*$p < .05$

variance. Initially, scores from the FES subscales of Cohesion, Conflict, Independence, Control, and Organization were entered as dependent variables. Results from MANOVA analyses indicated no significant effect of group membership, $p < .603$. Group differences were also examined using scores from the PSI subscales (e.g., PSI-PD, PSI-CDI, PSI-DC) as dependent variables. No significant differences were found on measures of parental stress, $p < .654$. Analyses were next computed to examine if diabetic and non-diabetic groups differed on measures of parenting behaviors. No significant differences were found on PS scores, $p < .489$, or APQ scores, $p < .148$.

Differences between groups were also examined for measures of child functioning. Scores from the DBRS and CBCL Externalizing subscales were combined in a dependent measure of externalizing behavior, while scores from the CDI Total, MASC Total, and CBCL Internalizing subscales served as a measure of internalizing behavior. Analyses revealed that groups did not differ on externalizing ($p < .745$) or internalizing ($p < .216$) behaviors. Additionally, groups did not differ when SPPC

subscales served as dependent variables in the MANOVA analysis ($p < .134$). Similar findings were found when CCSC subscale scores served as dependent variables in the MANOVA analysis, $p < .703$.

Due to the small sample size, effect sizes were also computed to determine if significant group differences were present, but undetected due to low power. Effect sizes were computed for dependent measures of family functioning (e.g., FES, PSI, APQ) and child functioning (e.g., CBCL, CDI, SPPC) using Cohen's d estimate. Results revealed small to medium effect sizes on measures of FES Conflict and MASC Total, respectively; however, results were not in expected directions. Children with diabetes had lower mean scores on FES Conflict ($M = 2.13$, $SD = 1.72$) than children without diabetes ($M = 2.93$, $SD = 2.15$), and lower mean scores on MASC Total ($M = 47.37$, $SD = 7.05$) than children without diabetes ($M = 52.33$, $SD = 10.31$). Small effect sizes were found between groups on additional measures of family environment, parenting strategies, and coping strategies. Diabetic children demonstrated higher mean scores ($M = 7.70$, $SD = 1.58$) than non-diabetic children ($M = 6.77$, $SD = 2.43$) on FES Cohesion, and higher mean scores ($M = 6.23$, $SD = 2.25$) than non-diabetic children ($M = 5.40$, $SD = 2.69$) on FES Organization. Small effect sizes were also found on CCSC Active, with diabetic children ($M = 2.77$, $SD = .54$) reporting higher scores than non-diabetic children ($M = 2.65$, $SD = .51$). Similarly, a small effect size was found on CCSC Distraction, with children with diabetes ($M = 2.30$, $SD = .61$) reported higher mean scores than children without diabetes ($M = 2.12$, $SD = .59$). The effect size for the difference between groups on the APQ Positive Parenting subscale was medium. Parents of children with diabetes reported

greater use of positive parenting strategies (M = 25.77, SD = 2.43) than parents of children without diabetes (M = 23.03, SD = 5.58).

Regression Analyses

A series of multiple regression analyses were conducted using a two-step process in order to examine further the hypothesized relationship between variables. First, a set of predictor variables thought to be conceptually relevant to outcome measures were chosen and entered using a simultaneous procedure. Group membership (e.g., diabetic v. non-diabetic), PSI Total, FES Control, PS Total, and APQ Supervision/Monitoring served as predictor variables across regression analyses. One subscale from the FES (e.g., Conflict) was initially examined as a potential predictor; however, this variable was highly intercorrelated with another predictor and, thus, was not selected for inclusion in the analyses. Significant predictors in each regression equation were selected and entered into an interaction term with group membership. The interaction terms were then entered into the regression equation in a second step in order to determine if results varied as a function of group membership. Dependent measures for regression analyses included CBCL Externalizing, CBCL Internalizing, CDI Total, MASC Total, and SPPC Total subscales.

Results from the first step of a multiple regression analysis conducted with CBCL Externalizing scores as the dependent measure are presented in Table 12. The set of predictors accounted for 45% of the variance in externalizing behaviors, $F(5, 54) = 8.73$, $p < .001$. The predictor variable of PSI Total accounted for a significant amount of variance (beta = .584, $p < .001$) in the dependent variable and was selected for inclusion in a second analysis. The product of PSI Total scores and group membership scores was

Table 12. Simultaneous Regression Analyses Predicting Child Behaviors

Predictor Variables	Beta	t	F	R^2
Step 1				
CBCL Externalizing			8.73**	.447
PSI Total	.584	4.80**		
FES Control	.075	.715		
APQ Supervision	.071	.621		
PS Total	.068	.521		
Group	.041	.401		
Step 2				
CBCL Externalizing			7.15**	.447
PSI Total	.596	3.74**		
FES Control	.072	.660		
APQ Supervision	.072	.625		
PS Total	.066	.498		
Group	.073	.246		
Group X PSI Total	-.037	-.115		
Step 1				
CBCL Internalizing			6.03**	.358
PSI Total	.543	4.14**		
FES Control	.118	1.046		
APQ Supervision	-.171	-1.395		
PS Total	.046	.324		
Group	-.005	-.041		
Step 2				
CBCL Internalizing			5.09**	.365
PSI Total	.626	3.66**		
FES Control	.097	.828		
APQ Supervision	-.160	-1.288		
PS Total	.032	.227		
Group	.223	.701		
Group X PSI Total	-.260	-.763		

*$p < .05$, **$p < .01$.

entered as an interaction term, along with the previous set of predictors, in the second step of the regression analysis for CBCL Externalizing. The regression equation again accounted for a significant amount of variance [F (6, 53) = 7.15, p < .001]; however, the interaction term was not significant (p < .910). Similarly, the relation between predictor variables and CBCL Internalizing scores was examined and is presented in Table 12. Thirty-six percent of the variance was accounted for by the predictors in this equation [F (5, 54) = 6.03, p < .001], and PSI Total scores was a significant predictor (beta = .543, p < .001). After entering the interaction term (e.g., PSI Total X group membership) and set of predictors into the second regression analysis, the equation significantly accounted for 37% of the total variance in CBCL Internalizing scores, F (6, 53) = 5.09, p < .001. The interaction term was not a significant predictor (p < .449) in the second regression analysis for internalizing behaviors.

Similar procedures were employed for outcome measures of CDI Total, MASC Total, and SPPC Total. Table 13 presents the results for the regression equations for the dependent variables of CDI Total, MASC Total, and SPPC Total scores. For CDI Total, the set of predictors initially accounted for only 13% of the total variance, which was not significant, p < .168. Therefore, the interaction of predictors with group membership was not analyzed in a second regression equation for CDI Total. Similarly, for the dependent measure of MASC Total, the regression equation was not significant, p < .121, with predictors accounting for only 15% of the variance in children's MASC Total scores. The set of predictors did not account for a significant amount of variance (p < .157) in children's overall self-perception.

Table 13. Simultaneous Regression Analyses Predicting Child Emotional Functioning

Predictor Variables	Beta	t	F	R^2
CDI Total			1.63	.131
PSI Total	.343	2.25*		
FES Control	-.024	-.186		
APQ Supervision	-.141	-.985		
PS Total	.031	.189		
Group	.054	.425		
MASC Total			1.85	.146
PSI Total	.021	.139		
FES Control	-.259	-1.990		
APQ Supervision	-.064	-.450		
PS Total	.013	.082		
Group	.285	2.248*		
SPPC Total			1.68	.134
PSI Total	-.353	-2.317*		
FES Control	.162	1.237		
APQ Supervision	-.142	-.995		
PS Total	.087	.535		
Group	-.078	-.608		

*p < .05, **p<.01.

CHAPTER IV

DISCUSSION

The present study examined the relationship between family functioning and child outcome variables in families of children with and without diabetes. Research has indicated a significant relationship between disruptive family processes (e.g., conflict, parental stress) and negative child outcomes in diabetic children (Daviss et al., 1995; Holmes et al., 1999). Children with diabetes have been found to have poorer psychological outcomes (e.g., depression, anxiety) than their healthy controls (Liss et al., 1998; Rovet & Fernandes, 1999), but further information is needed to understand the importance of parenting behaviors in this difference. Additionally, research has found that inconsistent or lax parenting behaviors are correlated with problem behaviors in children (Arnold et al., 1993; Webster-Stratton, 1990), but little is known about this relationship in families with diabetic children. Goals of the present study included broadening the knowledge about which parenting practices are related to appropriate diabetic monitoring and compliance by children, higher self-concept, and positive coping strategies by diabetic children. Results suggest that positive and effective family functioning is important in supporting positive outcomes for children, but that the presence of diabetes does not ultimately impact this association. However, findings suggest that parenting and family environment factors do play a substantial role in the

outcomes experienced by children with diabetes. Results of individual hypotheses are discussed below.

Based on previous studies (Kovacs et al., 1996, Ryan & Morrow, 1986), diabetic children in the present study were expected to report greater psychological distress and lower self-concept than non-diabetic children. However, results indicated no significant differences between groups on measures of depression, anxiety, internalizing behaviors, oppositional behavior, externalizing behaviors, and self-competence. Effect sizes indicated the groups were not notably different even when accounting for low statistical power. The results of the present study were not supportive of hypotheses regarding psychological difficulties, but were also not completely inconsistent with previous studies examining self-concept. The literature (Hanson et al., 1990; Holmes et al., 1999; Kovacs et al., 1986) has demonstrated variability in findings of self-concept in children with diabetes as compared to healthy controls. Variability between findings of previous studies may be related to methodological differences, including variability of measures assessing self-concept. However, it is unclear why no differences were found between groups on measures of depression, anxiety, and behavior problems, as has been documented in several previous studies (e.g., Liss et al., 1998). Findings further revealed that an earlier diagnosis of diabetes was associated with higher self-esteem for children.

Parents of children with diabetes were also hypothesized to report greater control and limits in their family environments due to the adjustments and limitations imposed by the chronic illness; however, no significant differences were found between groups on family environment characteristics. It was also hypothesized that more negative family

environments would be associated with poorer outcomes for children. Significant relationships were found between family environment characteristics and psychosocial outcomes as predicted, but the relation between family environment and diabetic adherence was not significant. Furthermore, associations between family environment variables and psychological outcomes differed according to group. Daily management of a chronic illness was not associated with greater conflict in families; however, conflict in the family environment was related to problematic behaviors in children with and without diabetes. Additionally, family conflict was significantly associated with greater depression and internalizing behaviors in diabetic children, and with feelings of ineffectiveness and overall lower self-competence in non-diabetic children. Thus, the presence of conflict in a family environment was associated with poorer psychological functioning in children, as expected, and the specific relationships differed for families with and without a chronic illness. However, in contrast to previous studies (Daviss et al., 1995; Hauser et al., 1990), diabetic adherence was not significantly related to family conflict or cohesion.

Further analyses of family environment characteristics found that diabetic families did not report greater control, organization, or cohesion than non-diabetic families. Analyses revealed small to medium effect sizes for family organization and control, respectively, indicating that group differences are present but of limited magnitude. The presence of greater control was not found to be beneficial for diabetic families as it was related to behavior problems in children and did not correlate with better diabetic adherence as expected. On the other hand, greater control in families did appear to be related to experiences of lower anxiety for children, indicating that children

in the sample felt less distress when their parents assumed greater involvement in family duties. This finding was found in diabetic families only, and may suggest that increased control by parents around issues of diabetes management may alleviate the child's distress around those issues. Overall, the presence of family control for diabetic families appears to be associated with both positive and negative outcomes for children.

Organization in the family environment appeared to affect differentially diabetic and non-diabetic families in the study. Greater organization was associated with better outcomes (e.g., less problematic behaviors) for children without diabetes, but correlated with more separation anxiety in children with diabetes. While causality cannot be determined for this unexpected finding, it can be hypothesized that children with fears of separation necessitate greater organization and predictability in their family environment. For children without diabetes, the relationship between family organization and child outcomes was expected. Families who reported greater organization had children with less behavioral difficulties and feelings of personal ineffectiveness as compared to families with less organization. This is consistent with findings in the literature that structure in children's environment predicts positive child outcomes (Arnold et al., 1993; Webster-Stratton, 1990).

Although children's self-perceptions were not significantly different across groups, aspects of self-perception of children with and without diabetes were differentially influenced by their family environment. Children without diabetes with higher family cohesion reported greater overall self-worth, including greater acceptance of their physical appearance and behavioral conduct. In contrast, higher family conflict was related to lower feelings of competence of behavioral conduct and overall lower self-

worth for these children. These results were not unexpected as studies have consistently found a negative impact of family conflict on the functioning of family members (Moos & Moos, 1994). Similar results were found in families of children with diabetes; negative family characteristics (e.g., conflict) were associated with poorer self-perception and positive family environments were related to greater feelings of self-worth. Specifically, greater family cohesion was significantly related to children's positive perception of their physical appearance. While other measures of self-worth were not significantly related to family environment variables, the finding for physical appearance is notable in that children with diabetes face additional concerns about their physical status than their healthy peers. Therefore, families that provide their children with cohesion and support may help to overcome any struggles their children have regarding the physical changes associated with diabetes.

It was also hypothesized that diabetic families would report greater parental stress as a result of dealing with a chronic illness, and that parental stress would be significantly related to behavior and emotional problems, lower self-competence, and use of less effective coping strategies by participating children. Results did not reveal significant differences in parental stress between diabetic and non-diabetic families, which was inconsistent with earlier findings (Hauenstein et al., 1989; Wysocki et al., 1989). It did not appear that this was confounded by the length of time since parents faced the initial diagnosis of their child, as age at diagnosis was not significantly correlated with parental stress either. Support for hypotheses was found in the associations between parental stress and psychological outcomes. Greater behavioral difficulties and emotional distress (e.g., depression, anxiety), and lower self-competence were associated with increased

parental stress for all participating families. Parental stress associated with feelings of distress in the parenting role, dysfunctional parent-child interactions, and difficulties with their child was significantly correlated with greater oppositional, aggressive, and internalizing behaviors in their children. These findings are consistent with parenting literature (e.g., Abidin, 1995; Webster-Stratton, 1990), and do not appear to be a function of coping with a chronic illness. Specific findings for families with diabetes indicated that parental stress associated with child-rearing difficulties was associated not only with their child's report of interpersonal difficulties, but also with the child's perception of lower sense of worth regarding his/her behavior.

It was hypothesized that families with diabetic children would endorse different parenting strategies than control families (e.g., more monitoring/supervision, less laxness). Furthermore, it was expected that ineffective parenting behaviors would predict poorer psychological outcomes (e.g., emotional and behavioral problems, lower self-competence) and less diabetic adherence in diabetic children. However, differences were not found between groups on measures of parenting behaviors. Based upon the analyses of effect sizes, it did appear that parents of diabetic children may utilize more positive parenting strategies in their interactions with their children. Positive parenting strategies (i.e., warmth, support) were not associated with outcome measures in the diabetic group, but correlated with less disruptive behaviors in children without diabetes. Therefore, it may be expected that children with diabetes experience better behavioral outcomes when more effective strategies are used by their parents. Additionally, greater supervision by parents was associated with lower levels of negative self-esteem and physical tension, and greater involvement of parents was associated with lower HbA1c levels for diabetic

children. This finding supports outlined hypotheses, and is consistent with the literature (Anderson et al., 1997; White et al., 1984). Contrary to outcomes in an earlier study (White et al., 1984), parents reported greater supervision when children were diagnosed with diabetes at a later age, although parents reported greater supervision with older children regardless of age at diagnosis. Problematic behaviors in children with diabetes also increased when parents utilized discipline strategies characterized by lengthy, verbal responses, permissive and inconsistent behaviors, and overly harsh or angry reactions. These associations were not evident in families without diabetes.

Anticipated findings for the present study also included differences between groups on types of coping strategies used by participating children. Closer examination of relationships between coping strategies and variables of interest, however, provides additional information on the functioning of participants. While no associations were observed between family environment characteristics and children's coping styles in diabetic families, cohesion in non-diabetic families was related to less utilization of avoidant coping strategies. Children who feel more supported in their family environment may feel more comfortable directly attending to difficulties through appropriate strategies (e.g., seeking family support).

Additionally, results revealed that increased stress for parents was associated with decreased use of effective coping strategies (e.g., distraction) for all children. It may be presumed that greater stress experienced by a parent exacerbates distress experienced by the child, which is significant for children with diabetes as stress is associated with decreased adherence and poorer metabolic control (Edwards, 1999). Furthermore, if children are unable to utilize appropriate coping strategies to manage difficulties, this

may experience further psychological distress and subsequent health complications (Spirito, Stark, Gil, & Tye, 1995). Indeed, results indicated that children in the current study experienced poorer psychological outcome (e.g., increased depressive symptoms) when ineffective coping strategies (e.g., avoidance) were endorsed. Consistent with the literature (Causey & Dubow, 1992), greater use of active and support-seeking coping strategies when faced with a problem was associated with lower anxiety and interpersonal difficulties for diabetic children. No significant findings were revealed between coping strategies and diabetic adherence, as with previous studies (e.g., Delamater et al., 1987; Jacobson et al., 1990). An interesting finding observed for children without diabetes was that use of active coping strategies was correlated with increased avoidant anxiety. This finding is contrary to positive outcomes normally associated with active coping strategies (Ayers et al., 1996), and it may be that anxiety about negative outcomes may prompt these children to utilize more strategies (i.e., both positive and negative) to deal with a problem.

Earlier studies have found that difficulties coping with chronic stressors such as diabetes can have important implications for psychological and physical functioning in children (Compas et al., 1988; Spirito et al., 1995). In the current study, greater difficulties managing daily responsibilities of diabetes and feelings of distress about aspects of the disease were related to greater psychological distress (e.g., depression, anxiety) in children. Similarly, parents reported that difficulties coping with their child's illness were associated with greater family conflict and parental stress, lower family expressiveness, and greater problematic behaviors and distress in their children. The difficulties and distress associated with having diabetes did not appear to impact

children's physical outcomes (e.g., HbA1c, adherence) as they did the psychological outcomes.

In an effort to understand further the relationship between variables studied, the results were examined using regression analyses. Taken together, aspects of the family environment (e.g., control), parental stress, and specific parenting behaviors predicted a great deal of the variability in children's internalizing and externalizing behaviors. Parental stress, specifically, accounted for a great amount of variance in predicting child outcomes. However, the impact of parental stress on child outcomes did not differ significantly as a function of the chronic illness, indicating that diabetes does not significantly mediate this relationship.

In summary, contrary to many findings in the literature, results revealed no significant differences between groups on measures of interest. Significant associations were found between measures of family functioning (e.g., conflict, ineffective parenting strategies) and child outcomes for each group, supporting the literature that negative family environments are associated with increased problems for children. However, due to the limitations of correlational research, the direction of the relationships is unknown and further examination would be necessary in order to understand whether the family environment impacted the child outcomes rather than negative child outcomes influencing aspects of the family environment. Results for diabetic families also found that greater parental involvement was associated with better metabolic control, earlier diagnosis of diabetes was associated with greater parental supervision, and ineffective parenting behaviors (e.g., laxness, overreactivity) were associated with more problematic behaviors. However, it also appears from the results that children with diabetes who

participated in the study were not significantly different than their healthy peers and did not reveal clinically significant difficulties overall. The absence of significant differences between families with and without diabetes was relatively surprising based upon the current literature, but may indicate that some children with diabetes are functioning better than expected. This finding is encouraging in that children with chronic illness do not necessarily experience difficulties that have been seen previously (Holmes, Yu, & Frentz, 1999; Rovet & Fernandes, 1999). The children with diabetes in the present study appear to be functioning similar to their healthy peers. Furthermore, when mean scores on outcome measures (e.g., depression, child behavior scales) were examined, participating children were functioning in the normal range with no clinically significant difficulties (see Table 3). These results can only be examined in the context of the current study, but may be indicative of a larger trend. However, there may also be alternative explanations as to why the current outcomes did not support the hypotheses presented.

The current study had a number of limitations that may have influenced the observed findings. First, information was obtained from a relatively small sample size that included a broad age range of children. Statistical power also may not have been robust enough to detect differences between groups, as evidenced by medium effect sizes for several measures. In addition, outcomes may vary as a function of child age, as previous studies have found that adolescents with diabetes experience greater difficulties than their younger counterparts (Anderson et al., 1997). Moreover, participants were primarily Caucasian and came from the upper Midwest, and results may not generalize beyond these parameters. The method of selection for the study may have been biased whereby diabetic families who were experiencing greater difficulties may have been

reluctant to participate in the study, thus resulting in a sample of relatively high functioning families with a child with diabetes. Additional limitations include the use of self-report data, as social desirability or misunderstanding of questionnaire items could have confounded the responses, and the lack of collateral (e.g., teacher, physician) information to corroborate outcome measures. Furthermore, results of correlations between reports of family environment and child outcomes should be interpreted with caution when a single informant (e.g., parent) provided information for both constructs. The manner in which some of the constructs in the study were measured is also a weakness. For example, levels of diabetic adherence and compliance were assessed with unstandardized measures, and responses were provided based upon parents' perception of their child's adherence. Finally, the use of correlation research does not allow any causal conclusions to be made based on the results, and directionality of findings is unknown as previously mentioned.

Despite the limitations outlined above, there are several strengths of the current study. First, the use of an age and gender matched control group allowed for closer inspection of relationships between variables beyond demographic differences. Further, by assessing a wide array of outcome measures (e.g., emotional, behavioral, self-worth), the impact of family and parenting variables could be better understood across many domains. Most importantly, the results obtained provide useful information regarding the relationship between measures of family functioning and parenting practices and outcome measures for children with diabetes. It provides support to the current literature with regard to the impact of parental stress, family environment, and parenting behavior on child outcomes, as well. This is useful information for researchers in examining relevant

factors that influence outcomes in children with diabetes, and offers preliminary data on the specific parenting practices that correlate with psychological and physical outcomes for children. Additionally, it benefits clinicians working with children with diabetes as it illustrates the importance of the family environment and guides appropriate intervention methods (e.g., involvement of families in therapy). However, clinical interventions aimed at improving family and child functioning should begin with a careful assessment of these variables in order to determine the most appropriate treatment approach for each family. Finally, knowledge of these findings can help families with children with diabetes feel hopeful about their ability to understand factors related to their disease and promote a sense of competence to address difficulties.

Results from the present study are able to further knowledge in the area of childhood diabetes; however, suggestions may be offered for directions in future research. Further examinations of children with diabetes may wish to obtain a larger sample size that is more diverse in racial characteristics, but narrow enough to examine age effects for children. Additionally, findings could also be strengthened by adding more objective measures of diabetic adherence (e.g., medical findings of HbA1c, physician report), which were not achievable in the present study, and obtaining collateral information (e.g., additional self-report, observational data) on measures of family functioning and psychological outcomes. Furthermore, future research may benefit from including an assessment of the child's perception of his/her diabetic adherence as related to his/her psychological functioning and compliance. Finally, there are likely to be many additional factors that are important in the physical and psychological outcomes of

children with diabetes, such as the role of the primary physician, and subsequent research may wish to include an assessment of these variables as well.

APPENDIX A

CONSENT FORM – DIABETES GROUP

My name is Lisa Leadbetter and I am a graduate student in the Department of Psychology at the University of North Dakota. I am interested in learning more about family functioning and parenting in families of children with diabetes as compared to children without diabetes. You and your child are invited to participate in this study, which is being conducted in partial fulfillment of a doctoral degree at UND.

If you choose to participate, you will be asked to meet with me for one session. In this session, you will be asked to complete a number of questionnaires regarding your family environment, your level of stress as related to parenting, your parenting style and how you are coping with the management of your child's diabetes. These questionnaires will also assess your child's health history and the behavioral and emotional functioning of your child. In addition, I will be asking your child questions about his/her current feelings of anxiety and sadness, his/her self-perception, his/her coping styles in response to stressful events, and his/her coping related to the management of his/her diabetes. It is expected that the entire session for you and your child will take no longer than 60 minutes. I am also interested in obtaining limited information from your child's physician regarding your child's medical status regarding diabetes. If you are willing to provide consent for this communication with the physician, I will ask you to indicate your consent below and complete a limited release of information form to be sent to your child's physician.

It is expected that your risk in this study is minimal. One possible risk is that you may feel some distress or concern while answering some of the questions regarding your family or your parenting. Another risk is that you may experience sadness after thinking about your child's illness. If you do experience any distress or discomfort during this study, I will talk with you about your feelings. You may also end your participation in the study without penalty. I will also provide you with referrals to counselors in your area if you would like these referrals; however, the responsibility for payment of these services would be yours.

It is expected that the risk to your child in participating is also minimal. Your child may feel nervous when talking with me about his/her feelings. Another potential risk is that your child may feel sad after talking about his/her illness. If your child appears to be feeling nervous or sad, I will talk with him/her about his/her feelings. Additionally, I will end participation if your child appears uncomfortable or requests termination in the study. I will also provide you with referrals to counselors for your child if you or your child would like these referrals; however, the responsibility for payment of these services would be yours.

Benefits to you in participating in this study may include gaining greater insight regarding thoughts and feelings about your family environment, parenting style, and level of parental stress. Benefits to your child may include enjoyment from one-on-one attention and special selection for the study, and the opportunity to talk with someone regarding his/her feelings. This study may also help children with diabetes and their parents talk more openly about any problems they are experiencing related to diabetes.

Any information that is obtained in this study will be kept confidential and will be coded and reported only in a way that will not identify you or your child. Your name or your child's name will not be written on the questionnaires. The questionnaires and consent form will be kept for 3 years, and after 3 years they will be disposed of by a paper-shredder. No one but myself and my supervisor, Dr. Andrea Zevenbergen, will have access to the individual information provided by you and your child. I will not be releasing information to you that your child has shared with me. However, should you or your child indicate that your child is in danger of hurting himself/herself, hurting others, or being abused by someone, I may need to waive confidentiality and follow mandatory reporting procedures to notify outside individuals or agencies. I will attempt to notify you of this beforehand.

If you choose to participate, you will receive compensation in the form of $10 after completing the session and your child will receive $5. If your family's participation is terminated due to your child's discomfort, you will still receive the $15 compensation.

I am available to answer any questions that you have concerning this study, including any questions that you may have in the future. You may reach me in the Psychology Department at (701) 777-3212. You may also contact my supervisor, Dr. Andrea Zevenbergen at (701) 777-3017.

I HAVE READ AND UNDERSTOOD THE INFORMATION ABOVE AND AGREE TO PARTICIPATE AND HAVE MY CHILD PARTICIPATE IN THIS STUDY.

_____ _____

Signature of Parent or Guardian Date

I AGREE TO PROVIDE LISA LEADBETTER WITH THE NAME OF MY CHILD'S PHYSICIAN. I AGREE THAT LISA LEADBETTER MAY CONTACT THE PHYSICIAN IN ORDER TO OBTAIN LIMITED MEDICAL INFORMATION REGARDING MY CHILD. THIS INFORMATION WILL BE LIMITED TO THAT REQUESTED IN THE ATTACHED PHYSICIAN QUESTIONNAIRE.

_____ _____

Signature of Parent or Guardian Date

APPENDIX B

CONSENT FORM – CONTROL GROUP

My name is Lisa Leadbetter and I am a graduate student in the Department of Psychology at the University of North Dakota. I am interested in learning more about family functioning and parenting in families of children with diabetes as compared to children without diabetes. You and your child are invited to participate in this study, which is being conducted in partial fulfillment of a doctoral degree at UND.

If you choose to participate, you will be asked to meet with me for one session. In this session, you will be asked to complete a number of questionnaires regarding your family environment, your level of stress as related to parenting, and your parenting style. The questionnaires will also assess your child's health history and the behavioral and emotional functioning of your child. In addition, I will be asking your child questions about his/her current feelings of anxiety and sadness, his/her self-perception, and his/her coping styles in response to stressful events. It is expected that the entire session for you and your child will take no longer than 60 minutes.

It is expected that your risk in this study is minimal. One possible risk is that you may feel some distress or concern while answering some of the questions regarding your family or your parenting. If you do experience any distress or discomfort during this study, I will talk with you about your feelings. You may also end your participation in the study without penalty. I will also provide you with referrals to counselors in your area if you would like these referrals; however, the responsibility for payment of these services would be yours.

It is expected that the risk to your child in participating is also minimal. Your child may feel nervous or sad when talking about his/her feelings with me. If your child appears to be feeling nervous or sad, I will talk with him/her about his/her feelings. Additionally, I will end participation if your child appears uncomfortable or requests termination in the study. I will also provide you with referrals to counselors for your child if you or your child would like these referrals; however, the responsibility for payment of these services would be yours.

Benefits to you in participating in this study may include gaining greater insight regarding your thoughts and feelings about your family environment, parenting style, and level of parental stress. Benefits to your child may include enjoyment from one-on-one attention and special selection for the study, and the opportunity to talk with someone regarding his/her feelings.

Any information that is obtained in this study will be kept confidential and will be coded and reported only in a way that will not identify you or your child. Your name or your child's name will not be written on the questionnaires. The questionnaires and consent form will be kept for 3 years, and after 3 years they will be disposed of by a paper-shredder. No one but myself and my supervisor, Dr. Andrea Zevenbergen, will have access to the individual information provided by you and your child. I will not be releasing information to you that your child has shared with me. However, should you or your child indicate that your child is in danger of hurting himself/herself, hurting others, or being abused by someone, I may need to waive confidentiality and follow mandatory

reporting procedures to notify outside individuals or agencies. I will attempt to notify you of this beforehand.

If you choose to participate, you will receive compensation in the form of $10 after completing the session and your child will receive $5. If your family's participation is terminated due to your child's discomfort, you will still receive the $15 compensation.

I am available to answer any questions that you have concerning this study, including any questions that you may have in the future. You may reach me in the Psychology Department at (701) 777-3212. You may also contact my supervisor, Dr. Andrea Zevenbergen at (701) 777-3017.

I HAVE READ AND UNDERSTOOD THE INFORMATION ABOVE AND AGREE TO PARTICIPATE AND HAVE MY CHILD PARTICIPATE IN THIS STUDY.

_____ _____

Signature of Parent or Guardian Date

APPENDIX C

ASSENT FORM – DIABETES GROUP

My name is Lisa Leadbetter and I am a graduate student in the Department of Psychology at the University of North Dakota. I am interested in learning more about how kids feel about having diabetes and how families work together. You are invited to be a part of my study.

If you want to be a part of my study, I will meet with you for about 1 hour. Your mom or dad will also be filling out papers in a room nearby. When we meet, I will ask you to answer questions about how you feel about things, how you feel about yourself, and how you deal with things that upset you (like diabetes). There are no wrong answers to these questions.

Sometimes, children feel nervous when they talk about their feelings. This might happen to you. You might also feel sad after we talk about how you feel about having diabetes. If you feel nervous or sad when answering my questions, I will stop and we can talk about how you are feeling. I can also help you find ways to cope with your feelings, or I can give you the name of another counselor that you can talk to if you want. You can stop answering questions at any time if you feel upset and do not want to continue.

Some children find that it is fun to be part of a study. You might also like being able to talk to someone about how you are feeling. If you want to be a part of my study, I will also give you $5 at the end of the study, even if you feel upset and do not want to continue.

I will not tell anyone about the things you tell me. I don't put your name on your papers, so no one will know what you said. And I keep everything locked up so no one else can see what you said.

If you have any questions, you can ask anytime during our meeting. If you have any questions after we are done, you can call me at (701) 777-9914.

I UNDERSTAND THIS INFORMATION AND AGREE TO PARTICIPATE IN THIS STUDY.

_____ _____

Name Date

APPENDIX D

ASSENT FORM – CONTROL GROUP

My name is Lisa Leadbetter and I am a graduate student in the Department of Psychology at the University of North Dakota. I am interested in learning more about how kids feel and how families work together. You are invited to be a part of my study.

If you want to be a part of my study, I will meet with you for about 1 hour. Your mom or dad will also be filling out papers in a room nearby. When we meet, I will ask you to answer questions about how you feel about things, how you feel about yourself, and how you deal with things that upset you. There are no wrong answers to these questions.

Sometimes, children feel nervous when they talk about their feelings. This might happen to you. If you feel nervous or sad when answering my questions, I will stop and we can talk about how you are feeling. I can also help you find ways to cope with your feelings, or I can give you the name of another counselor that you can talk to if you want. You can stop answering questions at any time if you feel upset and do not want to continue.

Some children find that it is fun to be part of a study. You might like being able to talk to someone about how you are feeling. If you want to be a part of my study, I will also give you $5 at the end of the study, even if you feel upset and do not want to continue.

I will not tell anyone about the things you tell me. I don't put your name on your papers, so no one will know what you said. And I keep everything locked up so no one else can see what you said.

If you have any questions, you can ask anytime during our meeting. If you have any questions after we are done, you can call me at (701) 777-9914.

I UNDERSTAND THIS INFORMATION AND AGREE TO PARTICIPATE IN THIS STUDY.

_____ _____

Name Date

APPENDIX E

DEMOGRAPHIC QUESTIONNAIRE

Family Information

Your Relationship to Child: Biological parent _____ Adoptive parent _____
Foster parent _____ Legal guardian _____

Your Birthdate: _____ (Month/Date/Year)

Your Gender: Male _____ Female _____

Your Ethnicity: Caucasian _____ Native American _____
African American _____ Asian/Pacific Islander _____ Hispanic/Latino _____
Biracial/Multiethnic _____ Other (please specify) _____

Parents Current Marital Status: Married _____ Single (never married) _____
Widowed _____ Separated _____ Divorced _____

Your Highest Level of Education: High school/GED _____ Graduate (Master's) _____
2 Yr. College/Tech School _____ Post-Graduate _____
4 Yr. College _____

Annual Family Income: less than 5, 000 _____ 50,001 – 75,000 _____
5,001 – 15,000 _____ 75,001 – 100,000 _____
15,001 – 25,000 _____ 100,001 or more _____
25,001 – 50,000 _____

Please list age and gender of other children in the household:

Child 1: Age _____ Gender _____ Child 4: Age _____ Gender _____
Child 2: Age _____ Gender _____ Child 5: Age _____ Gender _____
Child 3: Age _____ Gender _____ Child 6: Age _____ Gender _____

Child Information

Birthdate: _____ (Month/Date/Year)

Gender: Male _____ Female _____

Ethnicity: Caucasian _____ Native American _____ African American _____
Hispanic/Latino _____ Biracial/Multiethnic _____
Asian/Pacific Islander _____ Other (please specify) _____

Grade In School: _____

Has your child received any psychiatric or psychological counseling or treatment?
Yes _____ If yes, please indicate: Past _____ or Present _____
No _____

If yes, for what problems did you seek counseling? _____
If yes, indicate ages at which: Treatment began _____ Treatment terminated _____

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